WESTERN GAS

ctober
1928

20 Cents
the Copy

LIB OF CONGRESS
OCT 11 1928
PERIODICAL DIVISION

More than 5,000 gas men will soon tread the boardwalk at Atlantic City, convention site for the American Gas Association's tenth annual sessions

A MONTHLY JOURNAL DEVOTED TO THE WESTERN GAS & APPLIANCE INDUSTRIES

PRINT IN BINDING

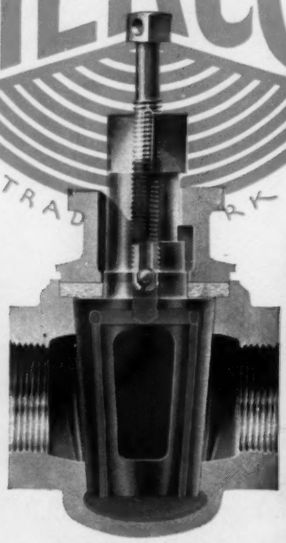
No Stuck Valves

MERCO

TRADE MARK

No Leaky Valves

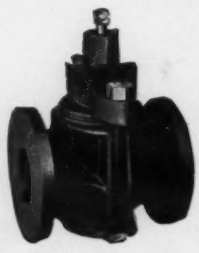
Lubricated Plug



Permanent Seal

Always easy to turn

Special Lubricant in Stick form



All Sizes

Ask for Catalog

Merco Nordstrom Valve Co.

Subsidiary of The Merrill Company

Engineers.... Manufacturers

BOSTON—184 Boylston St. NEW YORK CITY—11 W. 42nd St. CLEVELAND—Engineers Bldg.
CHICAGO—Midland Bldg. NEW ORLEANS—Masonic Temple Bldg. HOUSTON—Petroleum Bldg.
DALLAS—Magnolia Bldg. SAN FRANCISCO—343 Sansome St. LOS ANGELES—Union Bank Bldg.

Factories: Oakland, Calif. and Belleville, N. J. *Agencies in Principal Cities*

NORDSTROM VALVES

COOPER ENGINES

Will Continue To Be Good Engines

1. 50 H.P. four cycle gas or oil engine driven compressor.

2. Type 19, 760 B.H.P. gas engine.

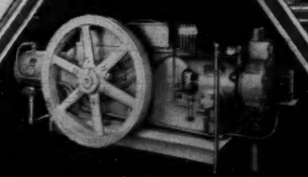
3. Power end, type 80, 170 H.P. gas engine driven compressor.

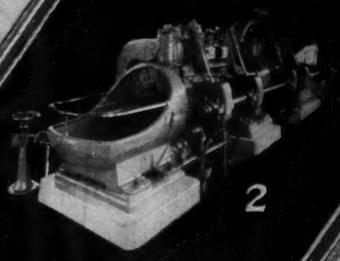
4. 1000 B. H. P. gas engine driven compressors.

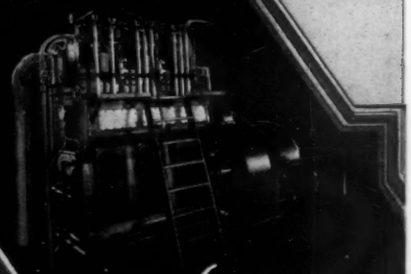
5. Type 80, 90 H.P. gas engine driving electric generator.

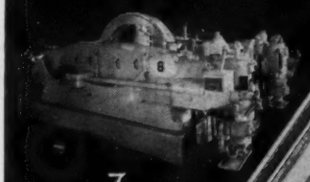
6. 150 H.P. oil engine driving electric generator.

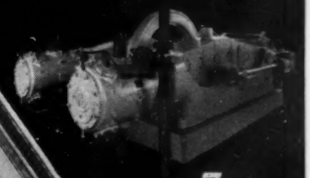
7. Compressor end, type 80, 170 H.P. gas engine driven compressor.











Nearly a century of manufacturing experience has convinced us that to build engines unusually well requires our entire effort and attention. Consequently the Cooper Company's only products are gas engines, compressors and Diesel engines, practically all of which are used in the oil and gas industry. For years we have staked our chances for continued success on our ability to build internal combustion engines which would satisfy the unusual requirements of the industry. Scientific research, exhaustive tests, the best engineering, modern equipment and materials are all used unstintingly in the effort. The result is that more and more of the leading companies in the oil and gas industry are choosing Cooper engines and compressors.

THE C. & G. COOPER CO., MT. VERNON, OHIO

Magnolia Bldg., Dallas 649 S. Olive St., Los Angeles Kennedy Bldg., Tulsa

October, 1928, Volume IV, Number 10. Western Gas is published by Western Business Papers, Inc., at 124 West Fourth Street, Los Angeles California. Subscription price (in advance) 20 cents the copy; $2.00 per year; 3 years $5.00; $3.00 per year foreign. Entered as second class matter June 1, 1925, at the postoffice at Los Angeles, California, under the Act of March 3, 1879.

WILL BE AT BOOTH 52 IN ATLANTIC CITY

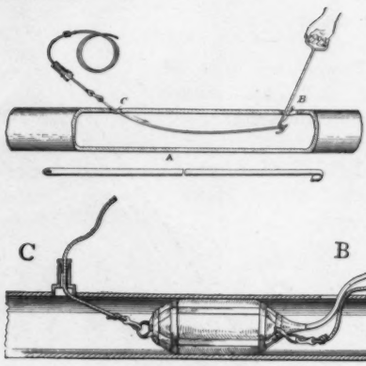
Street Department Supplies

Gas Main Bags

THREE TYPES

TYPE A—Seamless.
TYPE B—Reinforced Seams
TYPE C—Canvas Covered

FOR USE IN GAS, OIL, WATER AND DRAIN PIPES



Air Line Mask

With or without Blower.

Mask and Blower in separate cases.

Blower will supply sufficient air for 4 masks.

If you have not received your copy of our new catalogue, please let us know.

Safety Gas Main Soap Tape

For bandaging broken pipe. Also binding tape to cover soap tape bandage.

Sample on request.

Safety Gas Main Stopper Co.

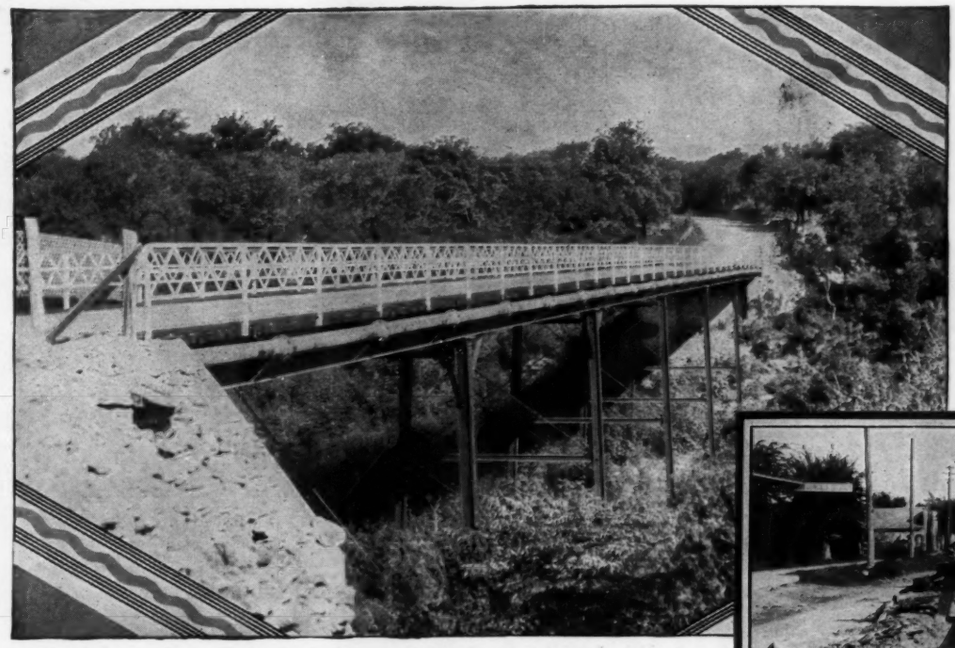
523 Atlantic Avenue, BROOKLYN, N. Y.

New England Representative
The Eastern Service Co., Boston, Mass.

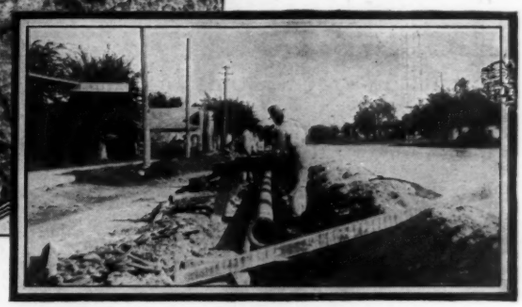
Texas-Louisiana Representative
Maintenance Engineering Corp.
Box 1402, Houston, Texas

Pacific Coast Representative
C. B. Babcock Co., San Francisco, Calif.

Mid-Western Representative Circle Corporation Tulsa, Oklahoma



Eight-inch Anthony Joint deLavaud gas pipe line suspended on bridge across Colorado River at Austin, Texas

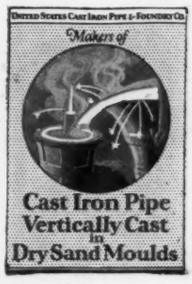


To reduce installation costs Anthony joint pipe is available in 24-ft. lengths made up of two standard lengths welded and tested under ideal conditions at our plant

No leaks occur in *this* bridge crossing

EACH year there is added proof of the soundness of deLavaud cast iron pipe with the Anthony joint for gas and water service. The Austin Gas Co. installed the 8 in. deLavaud main illustrated above in 1926. Where this line crosses the Colorado River Bridge, conditions are unusually severe, due to peculiar strain and constant vibration. That leakage has never developed is practical evidence of the great tensile strength of deLavaud pipe and the flexibility of the Anthony joint.

In modern high-pressure gas lines this type of installation has proved widely satisfactory. Under daily pressures of 90 to 125 lbs. leakage can be practically eliminated. DeLavaud pipe gives pressure-proof tightness, combined with ease of installation, and the age-defying economy of good cast iron.



MAY WE SEND YOU LITERATURE COVERING USES and LATEST SPECIFICATIONS OF DeLAVAUD CENTRIFUGAL PIPE

United States Cast Iron Pipe and Foundry Company

General Offices:
Burlington, New Jersey

Philadelphia: 1421 Chestnut St.
Chicago: 122 So. Michigan Blvd.
Birmingham: 1st Ave. & 20th St.
Buffalo: 957 East Ferry Street
Cleveland: 1150 East 26th Street
New York: 71 Broadway
San Francisco: 3rd & Market Sts.

Los Angeles: 403 So. Hill St.
Pittsburgh: 6th & Smithfield Sts.
Dallas: Akard & Commerce Sts.
Kansas City: 13th & Locust Sts.
Seattle: 1st & Marion Sts.
Minneapolis: 6th Street & Hennepin Avenue

"— worthy of a trip to Tulsa!"

"I am reliably advised that the Fifth Exposition this year will show the greatest improvement over any previous year, as the grounds have been improved, buildings enlarged, all exhibition space taken, and the latest and most modern equipment will be demonstrated—that the educational features of the Exposition are worthy of a trip to Tulsa. The Natural Gas Division of the American Gas Association at its convention in Dallas last May passed a resolution heartily endorsing the International Petroleum Exposition. I have just ordered hotel accommodations for the Exposition."

S. W. MEALS, Chairman, Natural Gas Dept.,
American Gas Association

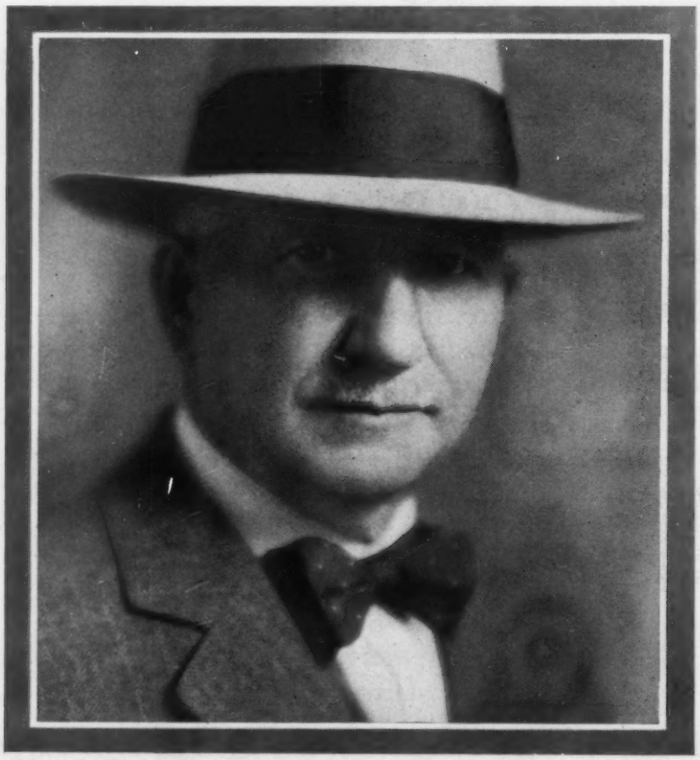


Photo by Bachrach

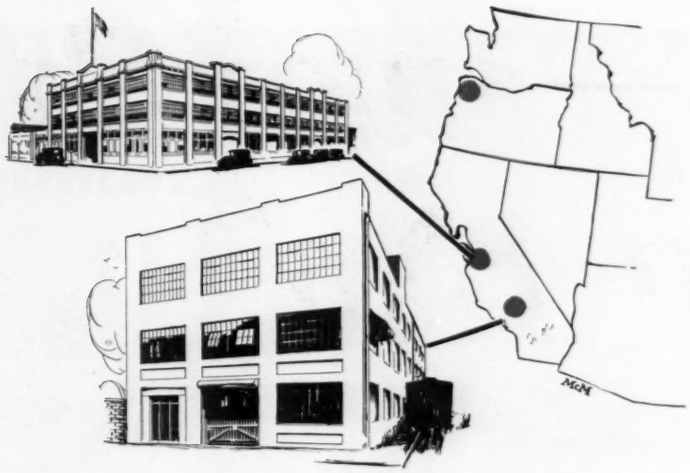
More than twenty foreign countries will send representatives to the "World's Fair of the Oil and Gas Industry." Producing, Refining, Transporting, Marketing and Scientific and Technical departments will interest those engaged in any branch of the Industry. Reduced fares on all U. S and Canadian railroads. For any information, address, J. Burr Gibbons, Gen. Mgr., Bliss Bldg., Tulsa, Okla., U.S.A.

INTERNATIONAL PETROLEUM EXPOSITION

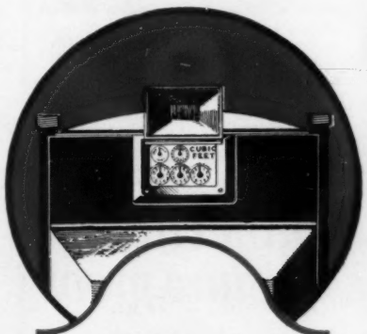
Tulsa, Okla.
U. S. A.

Oct. 20-29
1928

The Features that Characterize Pacific Meters have become Known Factors in Meter Value through Performance in Service



Specialization Serves The Coast



PACIFIC METERS

Tinned Steel Case

B Type	C Type
5- 150	6- 600
10- 300	11- 1120
20- 450	25- 2500
30- 600	40- 4000
60-1200	60- 6000
100-1800	170-17500
200-3100	

Rated capacities at ½" loss

Pacific Meters are specifically designed and manufactured for accurate and productive service on the Coast.

Territorial Specification brings outstanding advantages:

1. Convenient locations for manufacture—prompt and economical delivery.

2. Close contact with customer requirements—first-hand, scientific knowledge of conditions that affect gas meter performance.

Added to these are the many other KNOWN FACTORS IN METER VALUE that are constantly being stressed in our personal sales activity, in our literature and advertising.

Though customers are gratified—constant improvement in product and service continues. This is the prevailing policy that has brought to American Meter Company factories world leadership in gas measurement engineering.

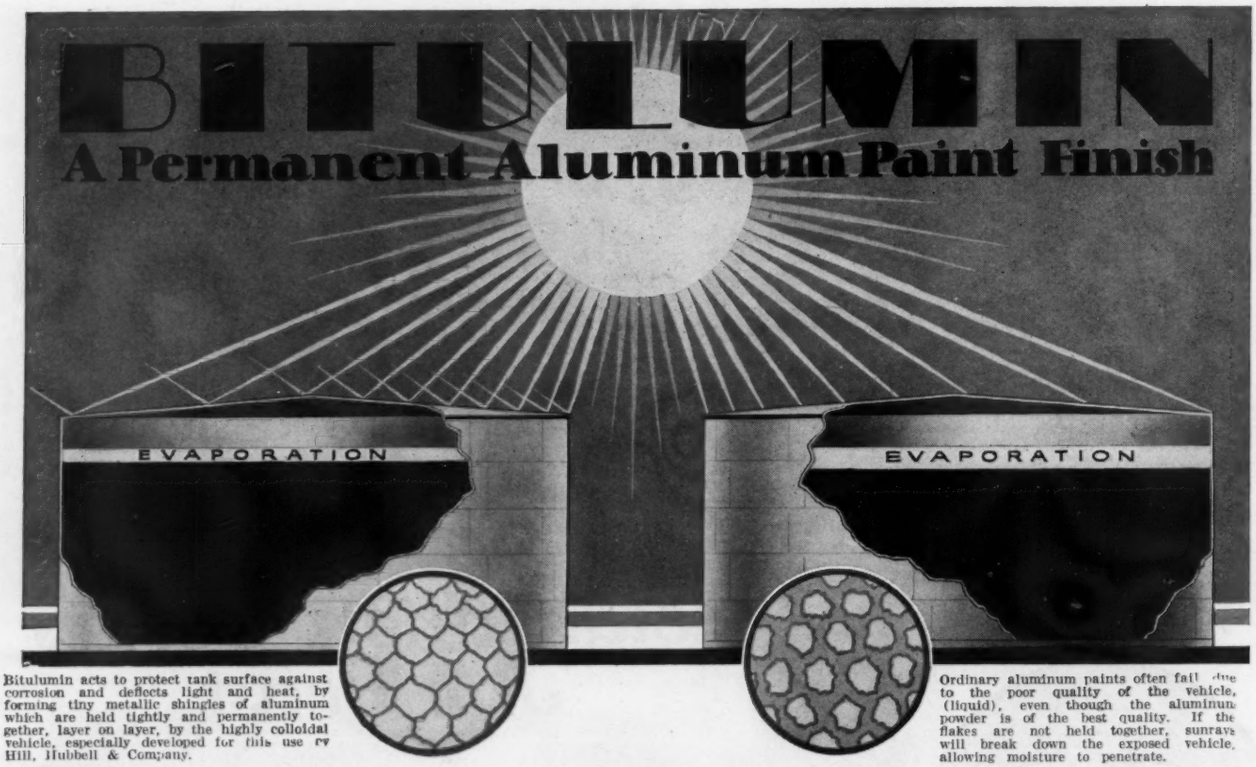
PACIFIC METER WORKS

Specializing in the Manufacture of Gas Meters and Allied Apparatus for Pacific Coast Requirements

San Francisco **Established 1901** **Los Angeles**

Northwestern Representatives — **Portland** — Northwest Gas and Electric Equipment Company

AMERICAN METER CO. MEASUREMENT ENGINEERS CUBIC FEET



Bitulumin acts to protect tank surface against corrosion and deflects light and heat, by forming tiny metallic shingles of aluminum which are held tightly and permanently together, layer on layer, by the highly colloidal vehicle, especially developed for this use by Hill, Hubbell & Company.

Ordinary aluminum paints often fail due to the poor quality of the vehicle, (liquid), even though the aluminum powder is of the best quality. If the flakes are not held together, sunrays will break down the exposed vehicle, allowing moisture to penetrate.

Minimizes ~ EVAPORATION LOSSES
Halts ~ CORROSION *with a protective* ~
sheating of Aluminum "Shingles" sun & moisture proof

The illustrations at the lower center show what takes place when Bitulumin is applied. Note how BITULUMIN leafs perfectly, forming tiny aluminum "shingles" which float to the surface of the vehicle, layer on layer, offering an impregnable shield against destructive ultra violet rays, and keeping moisture away from the metal surface.

Bitulumin saves its cost in less than a year on tank storage, and tank cars by reducing evaporation to a minimum. A single dark colored tank of 55,000 barrel capacity will lose as much as 250 gallons of valuable lighter fractions of the crude, on a hot day; not only reducing appreciably the volume of the crude, but reducing the gravity, and consequently the market value of the oil, as well. A loss of one degree in gravity is equivalent to the loss of 2% of the volume. Bitulumin deflects all but a small per cent of sunrays, keeping tanks at a more even temperature throughout the day and thus minimizing "breathing" due to temperature changes.

Because of its economy over a period of years, Bitulumin can be freely used in protecting metal buildings, refinery equipment, still towers, water tanks, etc., in fact, on any steel or iron structure exposed to the elements, where, as is the case with its application to tanks, it will outlast the best white paint, two to one. Write for descriptive literature, dealing with uses and economy of Bitulumin.

HILL, HUBBELL & COMPANY

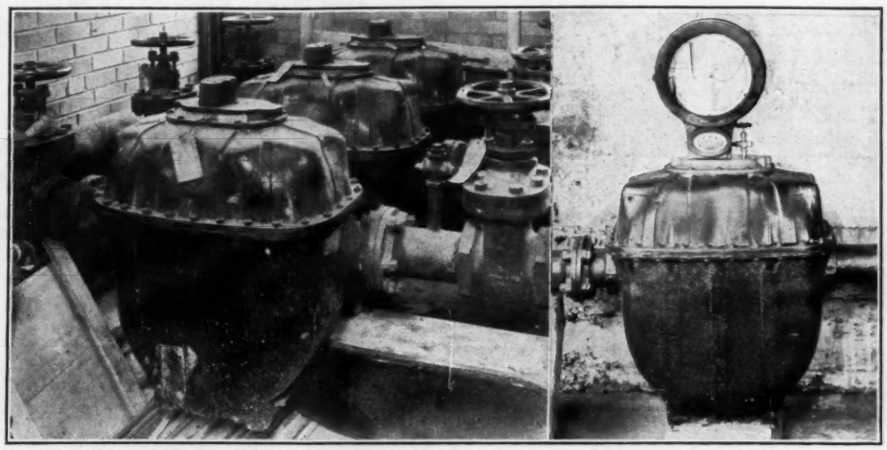
Manufacturers of

Highest Grade Oil Industry Paints and Pipe Line Coatings

Factories at SAN FRANCISCO and TULSA

District Offices

SAN FRANCISCO LOS ANGELES PORTLAND SEATTLE HOUSTON NEW YORK CITY BALTIMORE TULSA



One Meter or a Dozen

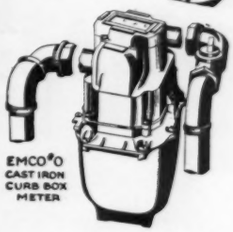
MANIFOLDING positive meters is a growing practice in industrial measurement. The EMCO removable valve plate, which permits the removal of the entire measuring apparatus, without disturbing the line connections, adds materially to the advantage of manifolding. Complete service changes can be made without interrupting the consumer's service.

In single meter installation, complete renewal with calibrated measuring mechanism, requires but a few minutes' work, leaving the line connection intact.

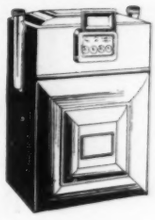
At left above, a typical factory installation. At right, single meter used with EMCO Combined Record Gauge.

EMCO #0 CAST IRON DRY GAS METER

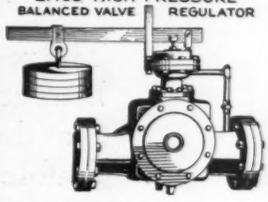
IRONCLAD CAST IRON DRY GAS METER



EMCO #0 CAST IRON CURB BOX METER

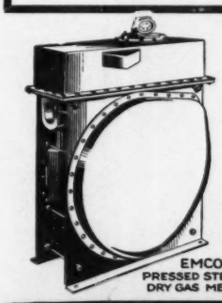


EMCO TIN METER

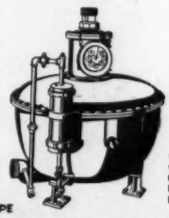


EMCO HIGH PRESSURE BALANCED VALVE REGULATOR

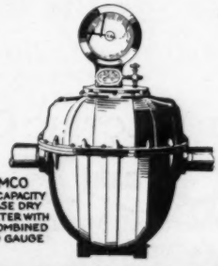
EMCO WATER HEATER AND GAS APPLIANCE REGULATOR



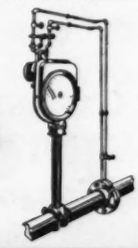
EMCO #5 PRESSED STEEL TYPE DRY GAS METER



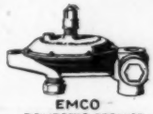
WESTINGHOUSE FLUID POSITIVE GAS METER



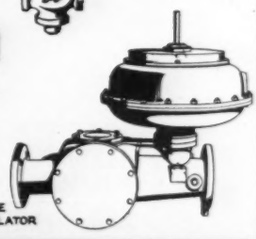
EMCO LARGE CAPACITY CAST CASE DRY GAS METER WITH EMCO COMBINED RECORD GAUGE



EMCO ORIFICE GAS METER



EMCO DOMESTIC SERVICE REGULATOR



EMCO LOW PRESSURE BALANCED VALVE REGULATOR

PITTSBURGH EQUITABLE METER COMPANY

MAIN OFFICE AND WORKS PITTSBURGH, PA.

NEW YORK CHICAGO COLUMBIA, S.C. LOS ANGELES DALLAS
TULSA SEATTLE KANSAS CITY SALT LAKE CITY

Automatic Gas Water Heater Sales in P G and E Territory

From June 17th to Sept. 1st

Dealers Sold	2750*
P G and E Sold	1485

In June the P G and E started an Automatic Gas Water Heater Campaign. Forty-four column inches of newspaper advertising was used in each of 38 daily newspapers, 100,000 broadsides were sent to consumers, 75,000 "Bill Inserts" were put in envelopes with bills.

The result of this volume of advertising could not but help benefit everyone in the water heater business. The fact that the combined dealer sales in our territory were almost double our own sales proves that.

Again "Central Station" activity helps all.

PACIFIC GAS AND ELECTRIC COMPANY

P·G·and E·

Owned · Operated · Managed
by Californians

* Based on confidential report from the leading jobbers.

PIPE ENGINEERING *for* MODERN OIL *and* GAS TRANSPORTATION

Essentially, SMITHWelding is an engineering process that interests the Oil and Gas Industry because it produces, on a mass production basis, pipe that satisfies all the new and complex demands of modern underground oil and gas transportation.

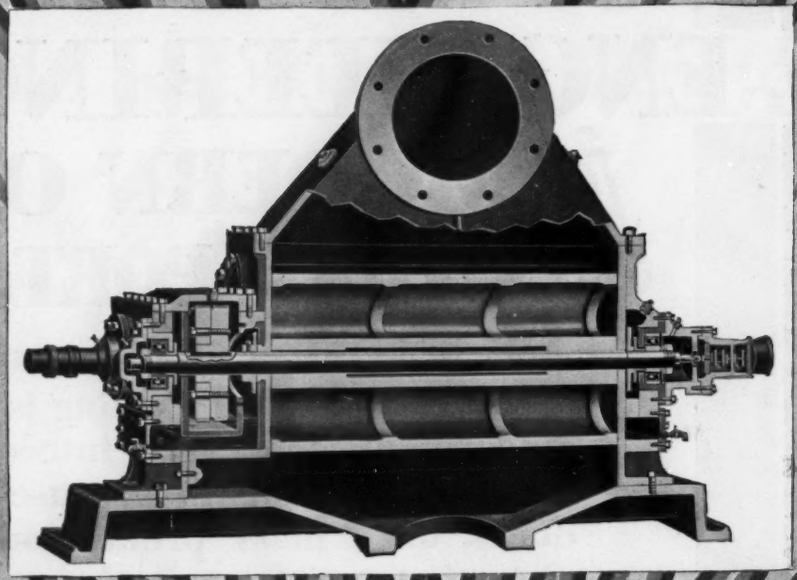
Engineering Its Manufacture

The manufacture of Smithsteel Gas Line Pipe is under the direct supervision and control of the Smith engineering organization that developed and perfected the process of SMITHWelding and its application to the manufacture of Smith Cracking Stills. Couplings and Pipe.

A. O. SMITH CORPORATION
General Offices—Milwaukee, Wisconsin
Oil & Gas Field Products Division
District Offices at New York, Pittsburgh, Tulsa, Houston, Los Angeles

SMITHSTEEL
GAS LINE PIPE

ROOTS



Complete Data on the New Roots Meter will be mailed on request

The NEW ROOTS METER

The P. H. & F. M. ROOTS CO.

CHICAGO
Peoples Gas Building

CONNERSVILLE, INDIANA

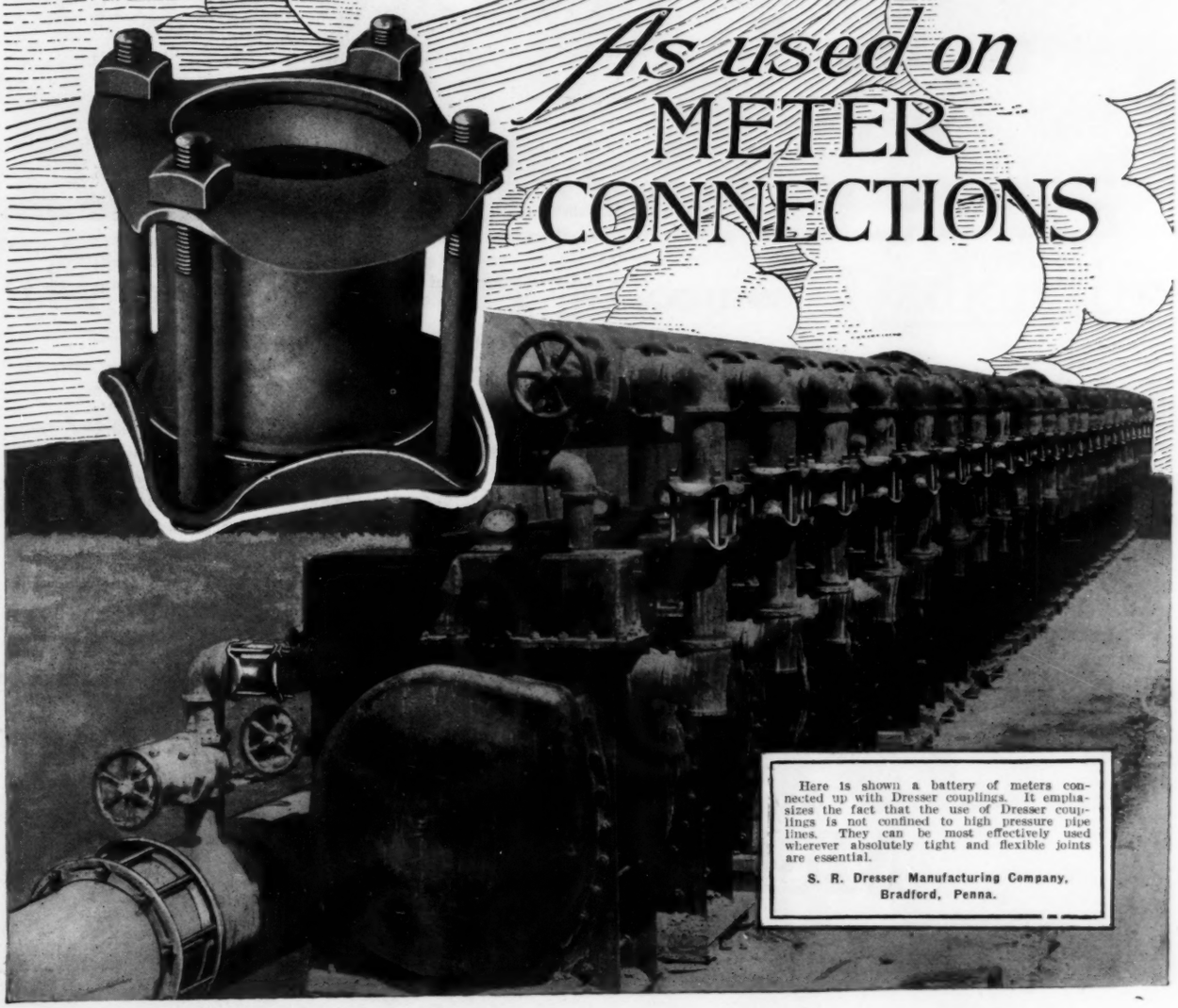
NEW YORK
120 Liberty Street

Originators of the Double Impeller Rotary Principle

SUTOR & COMPANY, 2008 East Slauson Avenue, Los Angeles, Calif.

DRESSER COUPLINGS *Dominate!*

As used on METER CONNECTIONS



Here is shown a battery of meters connected up with Dresser couplings. It emphasizes the fact that the use of Dresser couplings is not confined to high pressure pipe lines. They can be most effectively used wherever absolutely tight and flexible joints are essential.

S. R. Dresser Manufacturing Company, Bradford, Penna.

McEverlast
Protective Coatings
Applied Cold

Withstand Severest Tests of Corrosion and Electrolysis

Not once have McEverlast Protective coatings failed to give complete satisfaction. That's why they have been used by such companies as:

Southern California Gas Company; Shell Company of California; Pan-American Petroleum Company; Sun Oil Company; Simms Oil Company; California Petroleum Company; General Petroleum Company; California Eastern Oil Company; Western Oil and Refining Company; Chanslor-Canfield Midway Company; Union Pacific Railway; Hercules Gasoline Company; City of Los Angeles and twenty-nine other cities in the Southwest.

Subject Continuously to 6-volts for 90 Days

Here's one test "McEverlast" Protective Coatings passed with flying colors: Pipe protected by "McEverlast" Pipe Line Coatings was subjected to a continuous 90 day test with 6 volts, in a 5% salt solution for 30 days and the remainder of time in heavy alkaline soils. At the end of this extraordinary test there was not the slightest sign of breaking down—The "McEverlast" Pipe Line Coating was as sound as when applied.

No Heat Necessary in "McEverlast" Application—Smaller Crews—Eliminates Burns

Being applied cold, painting crews are smaller and accidental burnings eliminated. This permits the steady employment of the same men on paint work, allowing them to acquire a degree of skill impossible with other methods. These smaller and more efficient painting crews bring down the cost.

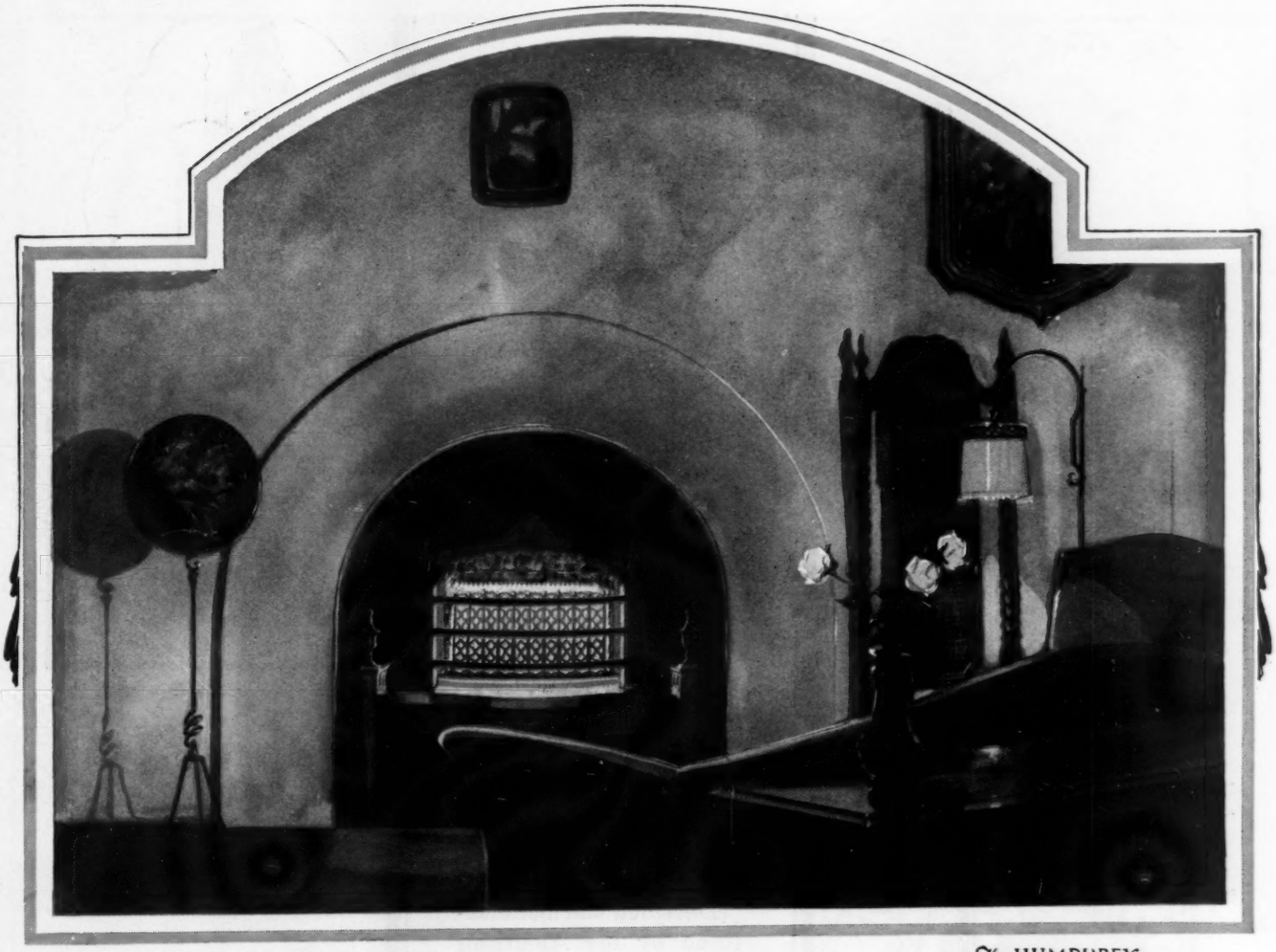
Write for our new book—"Safeguarding Pipe Lines with 'McEverlast' Protective Coatings."

McEverlast, Inc.

(formerly Everlasting Paint and Sales Co.)

1110 Board of Trade Bldg.,
Los Angeles, Calif.

Branch Office, 1314 Magnolia Bldg.
Dallas, Texas



This color-loving age welcomes The HUMPHREY Radiantfire in COLOR

First to recognize the importance of the insistent popular demand for color in furnishings for the home, Humphrey created a line of Radiantfires in color—a line welcomed by dealers and the public alike.

These new colored Radiantfires are available for the present heating season.

Always the Humphrey Radiantfire has had the double appeal of a heating unit and an attractive piece of furniture; now it has the third appeal of color. It is not too much to say that this color feature will double the effectiveness of your selling effort.

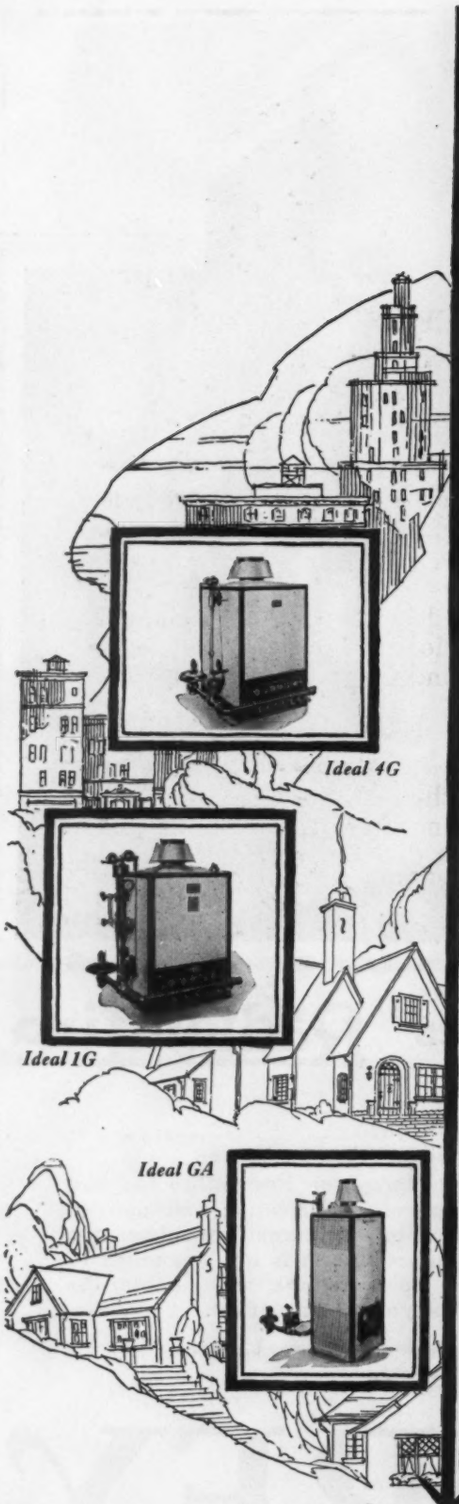
Available in Models 20 and 31 (maroon, green, walnut brown, black).
Not illustrated above.
Models 25, 30, 35, in electro-plated Flemish brass finish.

The HUMPHREY Radiantfire

TRADE MARK REG. U.S. PAT. OFF

Pacific Coast Manager
C. B. Babcock
135 Bluxome St.,
San Francisco

Manufactured by
General Gas Light Co.
Kalamazoo, Mich.



AN IDEAL GAS BOILER *for* EVERY *heating need!*

For cottages or bungalows—with or without basements—an Ideal Arcola Gas Heater!

For small or medium-sized homes —Ideal 1G Gas Boiler!

For larger homes and buildings— Ideal 4G Gas Boiler!

For office buildings, big apartment houses, hotels — Ideal 4G Gas Boilers in multiple units!

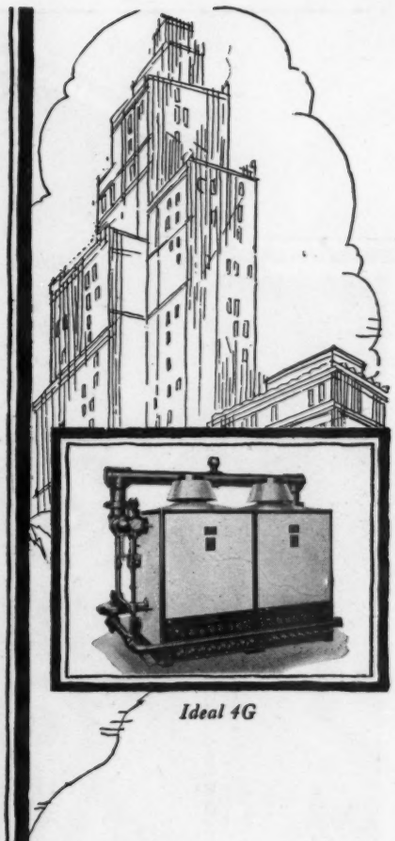
All these boilers are useful for large-volume hot-water supply and industrial applications.

THIS whole family of perfectly-designed gas boilers offers you *exactly* the right heating plant for *every* job on which you want to figure.

Designed and manufactured by the American Radiator Company, it is the latest triumph of their boiler engineers.

Ideal Gas Boilers are made available to you without delay by strategically-located distribution centers.

We have prepared for you a plan book covering every detail of selling plans that actually *work*. Won't you send for this complete and practical information?



IDEAL GAS BOILERS

Product of AMERICAN RADIATOR COMPANY *Gas Utilization Dept.*

Write to AMERICAN GAS PRODUCTS CORPORATION, *Distributors*

376 Lafayette Street, New York City

U. G. I.

STANDS FOR AND SQUARELY BEHIND CERTAIN THINGS

VIZ :

UNITED in its cooperative effort to give its clients and customers the best engineering, technical advice and materials possible, in order to produce the greatest value per customer-dollar expended.

GAS The mainstay of American household comfort. Our technical and business staffs are without superiors in their knowledge of and application to this fundamental industry. They are at your service.

IMPROVEMENT This has been the watchword and the aim of our organization since its inception. The results are so well known and far-reaching that they are common knowledge. The improvements worked out by our staff mean betterments for you.

THE U. G. I. CONTRACTING COMPANY

Division of

United Engineers & Constructors Inc.

Dwight P. Robinson, *Pres.*

Principal Office—Philadelphia

Chicago **Atlanta**

UNITED FOR GAS INDUSTRY IMPROVEMENT

Now GAS FURNACES ◆ IN ◆ COLOR!

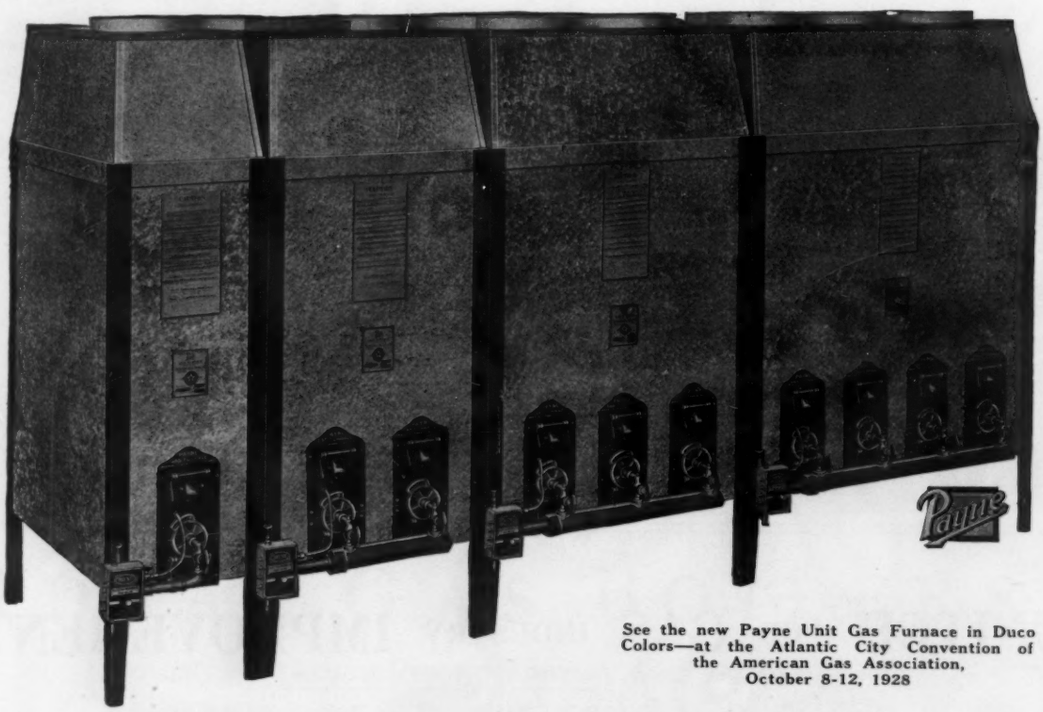
BATHROOMS, kitchens, playrooms; *and NOW the basement*—in bright, harmonious colors. Truly the age of COLOR in home decoration is here! Payne is first with the new Unit Furnaces in DUCO ENAMEL—cheerful, clean, attractive, making the basement a place of beauty and utility, whether used for child's playroom, billiard-room, den or workshop.

Payne

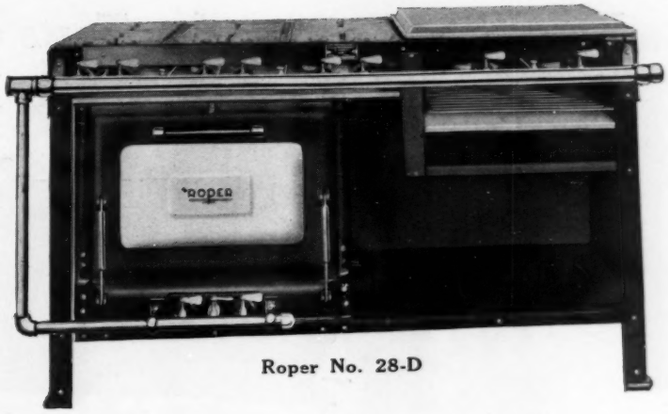
Payne Furnace and Supply Co., Inc.

Main Office and Factory;

OAKLAND BEVERLY HILLS, CALIFORNIA PASADENA



See the new Payne Unit Gas Furnace in Duco Colors—at the Atlantic City Convention of the American Gas Association, October 8-12, 1928



Roper No. 28-D

ARE YOU passing up good prospects?

For full profits from merchandising gas ranges you must concentrate on every sales possibility.

What about Hotels, Restaurants, Cafeterias, Clubs, Sanitariums, Hospitals, Boarding Houses, Y.M.C.A's and Churches? All of these need Gas Ranges.

With the Roper Hotel and Restaurant Line of Gas Ranges you can supply every need whether it be additional or new installations, thus, increasing your business with profitable sales—both from the sale of ranges and from increased consumption of gas.

Every one is absolutely guaranteed. The Roper Hotel and Restaurant Ranges come in heavy, medium and light duty sizes, to meet the demands of the largest hotel or the smallest "short order" house.

Learn more about the profitable line of Roper Gas Ranges. And get the facts about Roper Gas Fired Furnaces. Write to Roper of Rockford.

The Roper Hotel and Restaurant Range, illustrated above, is a very practical range for use in short order houses and smaller restaurants. It has a double cake griddle section and three open top grate cooking sections. Can be equipped with canopy or high shelf.

GEO. D. ROPER CORPORATION
Rockford, Ill.

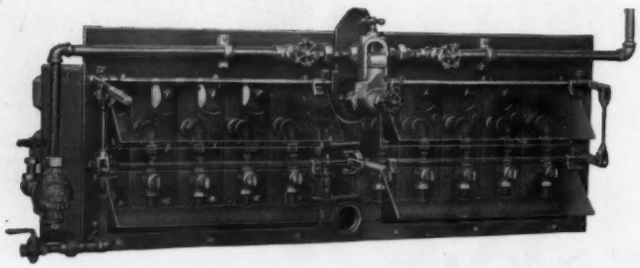
Pacific Coast Branch:
135 Bluxome Street, San Francisco, Calif.

ROPER
TRADE MARK

GAS RANGES

BE SURE THE ROPER PURPLE LINE AND THE ROPER COMPLETE OVEN CONTROL ARE ON THE GAS RANGE YOU SELL

Results of Evaporation Tests on a 150 H. P. Horizontal Return Tubular Boiler, Using



THE LEAHY MULTI-JET UNIT

(These tests were conducted by the Engineering Department of one of the largest oil companies in California.)

1	Object of tests	Efficiency	Efficiency	Efficiency	Efficiency	Average
2	Duration of Tests	7 Hours	8 Hours	7.25 Hours	7.25 Hours	Per Hour
3	Kind of Fuel	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas
	Average Temperatures and Pressures					
4	Gage Pressure (Pounds per sq. inch)	146.40	148.70	145.00	145.40	146.37
5	Temperature of Feed Water (Degrees F.)	179.07	182.42	186.00	180.33	181.98
6	Temperature of Boiler Room (Degrees F.)	89.57	85.03	88.41	89.40	88.10
7	Temperature of Stack Gases (Degrees F.)	505.03	606.85	586.90	513.77	553.14
8	Temperature of Fuel (Degrees F.)	78.78	78.12	72.02	61.20	72.53
9	Pressure of Fuel at Burner (Inches of Mercury)	1.96	4.86	4.35	1.99	3.29
10	Specific Gravity of Fuel (Air Equals 1)	.71	.7135	.713	.704	.710
11	Force of Draft in Furnace (Inches of Water)	.0509	.198	.090	.060	.099
12	Force of Draft Between Boiler and Damper (Inches of Water)	.0734	.246	.140	.060	.129
13	Force of Draft in Stack (Inches of Water)	.339	.366	.399	.350	.363
	Total Quantities					
14	Total Weight of Water Fed to Boiler (Pounds)	40309.00	71318.00	61182.00	42736.00	.....
15	Factor of Evaporation, Corrected for Moisture in Steam	1.0715	1.0683	1.0617	1.0671	.....
16	Total Equivalent Evaporation From and at 212 Degrees (Pounds)	43191.09	76189.00	64956.93	45603.58	.....
17	Total Cubic Feet of Fuel Burned	46850.00	82236.00	71651.24	49268.77	.....
	Hourly Quantities					
18	Weight of Water Fed to Boiler Per Hour (Lbs.)	5758.42	8914.75	8438.89	5894.60	7251.66
19	Equivalent Evaporation per hour from and at 212 degrees (Pounds)	6170.16	9523.62	8959.90	6290.14	7735.95
20	Cubic Feet of Fuel Burned Per Hour	6692.86	10279.60	9882.93	6795.69	8412.77
	Capacity					
21	Builder's Rating of Boiler (Horsepower)	150.00	150.00	150.00	150.00	150.00
22	Horsepower Developed	176.24	276.04	260.00	182.32	223.90
23	**Percentage of Rated Capacity Developed**	**117.50**	**184.02**	**173.30**	**121.54**	**149.09**
	Flue Gas Analysis by Volume					
24	Carbon Dioxide (CO_2) (Percent)	11.27	11.10	11.05	10.70	11.03
25	Oxygen (O_2) (Percent)	1.80	1.77	1.93	1.80	1.82
26	Carbon Monoxide (CO) (Percent)	.00	0.00	.00	.00	.00
	Economy					
27	Calorific Value of Fuel per cubic foot (B. T. U.)	1123.10	1116.30	1115.70	1115.00	1117.52
28	Equivalent Evaporation From and at 212 Degrees per cubic foot of Fuel (Pounds)	.9218	.9264	.9066	.9256	.9201
29	Cubic Feet of Fuel Burned per Horsepower Developed	37.97	37.23	38.00	37.27	37.61
30	**Combined Boiler and Burner Efficiency**	**79.65**	**80.53**	**78.85**	**80.55**	**79.89**

Leahy Manufacturing Co., 1804-10 East Eighth Street, Los Angeles, California

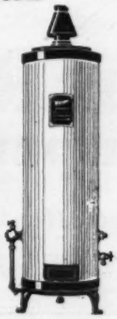
Beauty is Trump

LEAD off with the ace of selling appeals — BEAUTY. Welsbach has dealt you a hand for selling the Hotzone heater that will open more purses than anything in the deck . . . *The difference of a few cents on a quart of carrots might stop a sale but a difference of a dollar on a jar of beauty cream won't even cause a hesitation . . .*

So discard your tales of wash days, dish washing and housecleaning. Lead trump! Use the "Beauty Appeal"—the modern Welsbach Hotzone selling plan—and win.

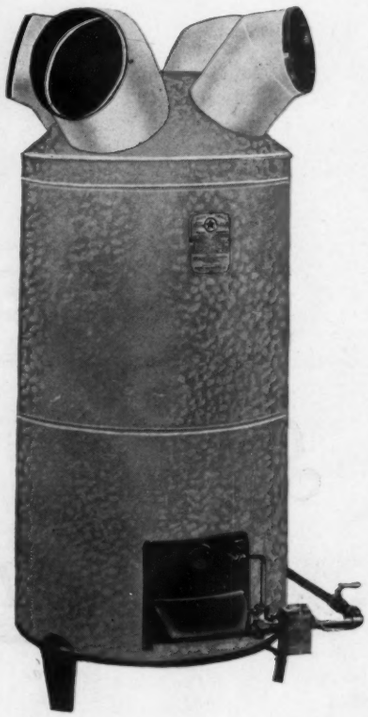
To announce Hotzone's bid for the beauty business, we have prepared a series of attractive, eye-catching advertisements. The illustrations of these are exceedingly smart and well drawn. They enable Hotzone salesmen to play their hands to best possible advantage. Let us send you a set of proofs today. Address Welsbach Company, San Francisco Office, 863-865 Mission Street.

Member American Gas Association
Member Pacific Gas Association

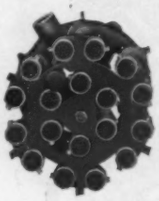
Welsbach SELF ACTION GAS  WATER HEATER **HOTZONE**

The Pacific Announces a New Line

of Unit Gas Furnaces Approved by the American Gas Association



This furnace is round instead of square. As a result there are no corners and no dead air spaces. There is better circulation because of the absence of corners. Consequently, heating is accomplished more quickly. The heating element is completely welded throughout, is gas tight, and permits no combustion fumes to escape. The heating unit is of 20-gauge pure Ingot Iron Toncan metal, known for its rust resisting qualities.



Pacific has devoted years to the development of this new furnace which now carries the BLUE STAR OF APPROVAL. Back of this approval is our 15 year old reputation as the leading and largest gas heating organization in the West.

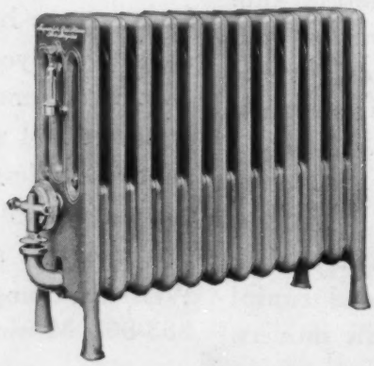
New Multi-Tubular Burner

Each burner has its independent injection of gas. Primary air for combustion is directly siphoned at each individual burner. There is no need for adjusting of the gas and air for combustion as this new Pacific Burner is scientifically designed to automatically give the correct proportion of air to gas. This results in complete combustion and a high temperature flame of proven economy. No soot. No odors.

Pacific Unvented Gas Steam Radiators Also Approved

By selling the Complete Pacific Line You Have the Advantage.

Because with the complete Pacific line you can offer the correct solution to every heating problem. Where other heating salesmen stress their particular appliance, our agent selects from a full line the appliance best suited. We have a real money making proposition. Write for particulars.



And NOW, Pacific Unvented Gas Steam Radiators, furnished in 4 column pattern 26, 32 and 38 inches high, carry A. G. A. BLUE STAR SEAL OF APPROVAL. In addition to this approval, the Pacific Gas Steam Radiators are approved by the Underwriters' Laboratories.

Pacific Gas Radiator

Gas Heating **Company** *Headquarters*

Roseberry and Walter Streets, Huntington Park, California

MANUFACTURERS *of* EVERY TYPE *of* GAS HEATING APPLIANCE

WESTERN GAS

307 Thomas Building,
Dallas, Texas
Phone 2-8708

447 Sutter Street
San Francisco, Calif.
Phone GArfield 2772

Publication Office, 124 West Fourth Street
Los Angeles, Calif. Telephone TUcker 8982

Contents for October

Charles H. Dickey, Newly Elected President of the Pacific Coast Gas Association ..... Frontispiece

The Thirty-Fifth Convention Goes Down In P.C.G.A. History 23

Tenth Annual Sessions of A.G.A. at Atlantic City 26

Using Underground Reservoirs for Natural Gas 28
By A. F. Bridge and H. P. George

Editorial 30

Gas Industry's Future Lies in Selling 31
By F. S. Wade

Corrosion of Pipe Lines 32
By K. H. Logan, L. F. Athy, and C. T. Langford

No Tenant Problem In This All Gas Apartment House 36
By Howard M. Thomas

This Month's Patents Pertaining to the Industry 37

With the Metermen 38

The Application of Meters to Field and Plant Problems ..... *By J. O. Wiley*

Means for Removal of Liquid and Solid Impurities In Natural Gas ..... *By E. Lorenz*

October 20-29, Dates for International Petroleum Exposition at Tulsa, Oklahoma 46

St. Louis Baking Contest Revives Interest in Home Cooking 50
By Norman B. Terry

Natural Gas Gasoline Operations 56

JAY JENKINS
Publisher

GEORGE H. FINLEY
Managing Editor

ELLIOTT TAYLOR
San Francisco Manager

CRAIG ESPY
Mid-Continent Manager

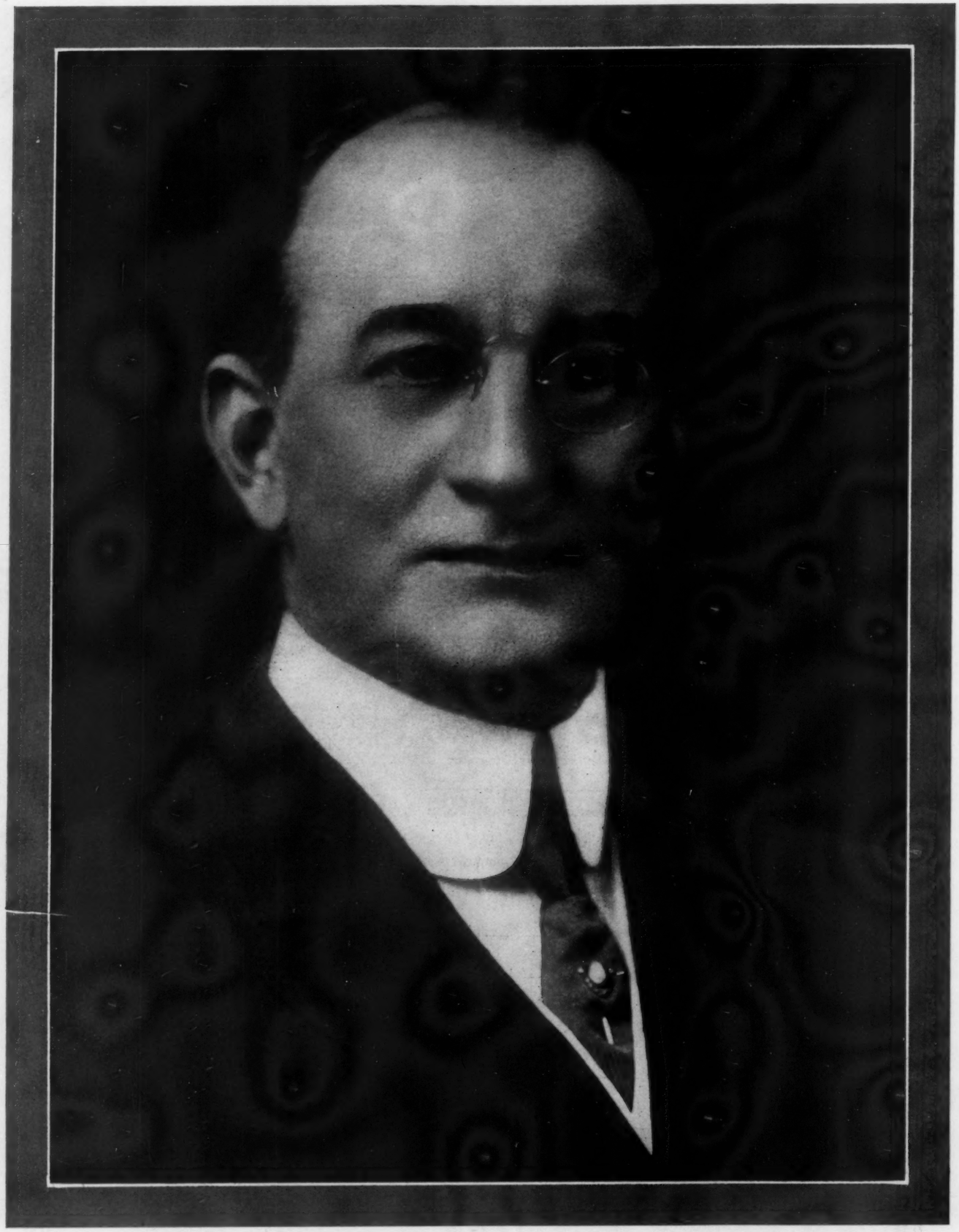
Volume IV **October, 1928** **No. 10**

Official Publication: The Pacific Coast Gas Association; Southern California Meter Association

Western Gas is published by Western Business Papers, Inc. at 124 West Fourth Street. Los Angeles, California. Subscription price (in advance) 20 cents the copy; $2.00 per year; 3 years $5.00; $3.00 per year foreign. Entered as second-class matter June 1, 1925, at the postoffice at Los Angeles, California, under the Act of March 3, 1879.

Copyright, 1928, by Western Business Papers, Inc.

Western Gas *is fully protected by copyright, and nothing that appears in it may be reprinted without permission.*



Charles H. Dickey, newly elected president of the Pacific Coast Gas Association. For many years Mr. Dickey served as president of the American Meter Company; he is now a director of the Pacific Lighting Corporation, the Pacific Gas and Electric Company, and the Southern Counties Gas Company, as well as a vice-president of the last named utility. His membership in the Pacific Coast Gas Association is of 35 years' standing, and he enters upon his leadership of the new P. G. C. A. administration from a background of service to the Pacific Coast and national gas industry

WESTERN GAS

"Reg. U. S. Pat. Off."

A Monthly Journal of the Gas, Gas Appliance and Natural Gasoline Industries in *Western America*

SAN FRANCISCO **LOS ANGELES** **DALLAS**

The Thirty-Fifth Convention Goes Down *in* P. C. G. A. History

By GEORGE H. FINLEY

Managing Editor, WESTERN GAS

WHETHER it is a carry-over from the fine old days of the dons, or whether it is just an emanation of the brand of public utility service put out in that far southern metropolis, certain it is that the hospitality of Coronado and its mainland neighbor community, San Diego, is nothing less than a fine art. At least, that is the conclusion of 401 Pacific Coast Gas Association visitors who sojourned at the Hotel del Coronado from September 17 through the 20th during the Association's 35th annual convention. From the beginning of their stay to the time of departure, P.C.G.A. members were surrounded by a generous hospitality which blended the peerless services of the convention arrangements committee with those of the famous old hotel which was official headquarters.

General Convention Chairman Charley Weiss, his efficient supporting committeemen, and the San Diego Consolidated Gas and Electric Company, perfect host to the convention, may take to themselves a big share of credit. Not since 1912 had the P.C.G.A. taken its sessions as far south as San Diego, but in the light of the splendid attendance and general perfection of convention appointments enjoyed this year we hazard the guess that the return to San Diego will not be so long delayed again.

Convention registration opened Monday morning, with a full crew, headed by Alfred May, chairman of the registration committee, on the desk to handle the throng. From that time on there were few idle moments. When there was a lull between sessions there were exhibits to be inspected, and D. H. Perkins who headed the exhibit committee saw to it that there was no lack of variety in the 43 individual booths. Convention exhibits covered 3500 square feet of floor space, utilizing every nook and cranny which the Hotel del Coronado could muster for the purpose. Between 750 and 800 people inspected the splendid displays which were set up, and both spectators and exhibitors expressed themselves as highly pleased with this convention feature.

President L. M. Klauber, whose exacting duties as general superintendent of the San Diego Consolidated Gas and Electric Company have not prevented him from contributing richly of his time and thought to Association administration during the past year, called the convention in general session Monday afternoon in the ball room of the Coronado. W. F. Raber, vice-president and general manager of the San Diego utility, welcomed the delegates in the name of his company and Coronado, following which Mr. Klauber in his president's address reviewed the Association year and pointed the course of its future development.

955 MEMBERS

Following the president's message Executive Secretary Clifford Johnstone presented a brief report, the feature of which was the statement of growth in membership. During the past year P.C.G.A. membership has grown from 877 to 955.

As the principal development of the first general session the Association's new administration was elected. The following men, whose names had previously been placed in nomination by a committee comprised of F. J. Schafer, chairman, S. Waldo Coleman, George L. Myers, E. L. Payne, and B. S. Pedersen, were unanimously called upon to take Association affairs in hand for the 1928-1929 season: Charles H. Dickey, of San Francisco, and for 35 years a member of the Association, president; Frank H. Bivens, of Los Angeles, vice-president; D. G. Martin, San Francisco, treasurer; for Directors, John Keillor, Vancouver; H. L. Masser, Los Angeles; Wm. Moeller, Jr., Los Angeles; W. M. Thompson, Alhambra.

Next in importance to the conduct of Association enterprises during the year ahead was the naming of section officers. B. H. Parkinson, of the Portland Gas and Coke Company, will lead the Accounting Section; Clyde H. Potter of the Southern Counties Gas Company, the Commercial Section; A. E. Holloway, of the San Diego Consolidated Gas and Electric Company, the Public Relations Section; and Van E. Britton, of the Pacific Gas and Electric Company, the Technical Section.

Conduct of Sectional activities will be aided during the coming year as a result of a decision by the Board of Directors of the Association, providing for the appointment of two vice-chairmen for each section, one to be chosen from the north and the other from the south. During the year meetings will be held by each section at which the specialized projects of sectional committee work will be furthered. These are not designed as

Some of the 401 convention delegates who gathered at the Hotel del Coronado,

regional conferences but rather as sectional meetings. The only regional conference contemplated is one tentatively planned for Victoria in June.

Del Monte, California, has been selected by the directors as convention site for the 36th annual convention in 1929, to transpire the week of September 10th.

General session programs at Coronado were two in number, and were participated in by a number of executives who brought messages of real value to the convention.

On Monday afternoon Edwin Higgins, managing director of the Chamber of Mines and Oil, dealt with "The Conservation of Natural Gas in California." Mr. Higgins gave a highly interesting review of the progress made since the appointment of Governor C. C. Young's committee on gas conservation, his moral being that quick results have been attained through cooperation of state and industry. Excerpts from his address will appear in an early issue.

The Thursday afternoon general session, which closed the business side of the convention, was designated a "Sales Promotion Conference," and it placed the Association and leading companies in its membership strikingly on record as recognizing the vital need for aggressive salesmanship in the gas industry.

President Klauber laid the groundwork for the discussions to follow, when he urged the industry to get outside of itself and take note that a new day and a new set of conditions now face it. One thought injected by Mr. Klauber is contained in his statement that the competition of today is "a competition of *service,* as between industries."

Speakers following President Klauber on the sales promotion program included C. B. Babcock, president, C. B. Babcock Company; H. R. Basford, president, H. R. Basford Company; both of whom brought the valuable reactions of the dealer in gas appliances as a contribution to the conference; Frank Weiss, manager new business, Los Angeles Gas and Electric Corporation, who drew lessons from the salesmanship methods of the electric company; R. E. Fisher, vice president, Pacific Gas and Electric Company, who stressed the need for a sustained sales policy and outlined the policy being applied on his company's system; F. J. Schafer, general manager of the Southern California Gas Company, who pointed to the rational classification of rates as an outstandingly important route to sales; and F. S. Wade, president, Southern Counties Gas Company, whose paper "The Importance of Gas Sales Promotion" appears in this issue and well merits a reading as a clear statement of the executive viewpoint on the ways and means of selling.

Following the sales promotion conference each of the retiring general section chairmen was given opportunity, under the head "Our Work and Our Ambitions," to outline the principal projects which had engaged his respective committee organization's attention during the year closed, and to point a prophetic finger at the work ahead, incorporating recommendations as to the course which sectional endeavor should follow.

W. E. Robbins, general chairman of the Accounting Section, gave a resume of the year's reports, recommending continuance of work on undistributed costs, and that the committee on fixed capital records be continued. He stressed the value of accounting research, and spoke also of the Association questionnaire which was one subject of committee activity in his section.

For the Commercial Section its gen-

Reading from left to right in these clippings from the Convention Movies, we have: Clifford Johnstone; Walter Rich and W. M. Thompson; L. M. Klauber and C. H. Dickey

September 17-20, for the Pacific Coast Gas Association's 35th Annual Convention

eral chairman, C. R. Miller, outlined the plan for four regional sales meetings during the next fiscal year and detailed the new set-up for his section's activity. He recommended budgeting in sales work as a subject warranting committee investigation.

D. L. Scott, general chairman of the Public Relations Section, gave a skeleton plan of that body's work as projected. The five heads under which it will fall are: Advertising and publicity; a self-survey of operations and activities of member companies as to service; employee relations; legislation and taxation; customer ownership.

H. L. Masser, general chairman of the Technical Section, spoke of the constant improvement in operating methods, which gives all Technical Section committee endeavor the character of a progress report rather than a final expression of approved practice. Upon this basis he recommended for the year ahead:

1. Increased permanence of committees.

2. Periodic reports throughout the year.

3. Specialized group meetings during the year.

He urged that the work of committee chairmen be of a directive nature, rather than personal sharing in detail of committee activity.

Continuation of five Technical Section committees was recommended, these being the committees on water gas, load factors, natural gas measurements, oil specifications and chemical laboratory methods.

Emphasizing the fast changing period in which the utility is being called upon to serve, Mr. Masser briefly sketched in the expansion which has taken place in engineering activity, and pointed out that the engineer now demanded by the industry is the engineer with a sales sense.

The report of the resolutions committee, made up of E. F. Pollard, Norman F. McKee, and W. M. Dickey, was submitted and adopted as read, at the conclusion of the Thursday afternoon general session. Convention resolutions carried the official appreciation of the Association to its officers and committee workers for their effective services; to the convention committee, headed by Charles D. Weiss; to the San Diego Consolidated Gas and Electric Company; and to the Hotel del Coronado, for the general excellence of Convention appointments and services.

Another resolution expressed the desire for emphasis in Association effort upon sales and utilization problems in these words:

1. WHEREAS, this Association has in the past devoted its major effort to developing and improving the technical side of manufacturing and distributing methods, and has thereby contributed materially to the advancement of the industry, and

WHEREAS the results of this effort have been so outstanding as to attract national recognition to the Association and individual members, and

WHEREAS, it is the expectation that these contributions to the advancement of the art will continue unabated; now, therefore, be it

RESOLVED, that similar untiring diligence also be devoted to constructive sales and utilization effort to the end that the manufacturing facilities developed shall not only be fully employed but also that full advantage be taken of our natural resources.

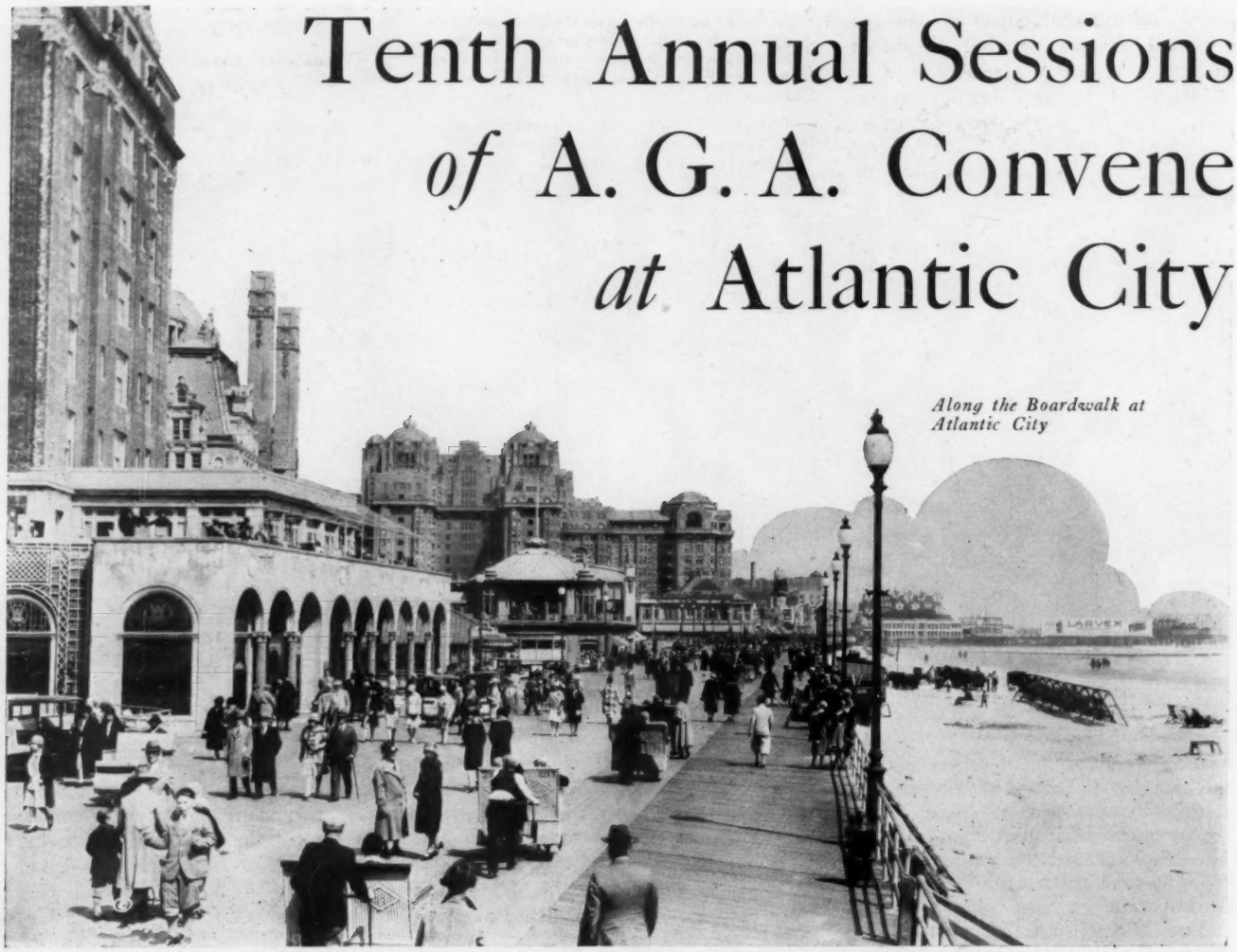
The committee also brought in a resolution strongly urging executive attendance at conventions, as follows:

RECOGNIZING that the cost of convening and conducting the annual conventions of this Association, measured in time and expense, is a very material item, and

(Continued on Page 56)

Left to right: Agua Caliente Spanish dancers who were among the P.C.G.A. entertainers; a specially posed scene from the ladies' putting contest; Hotel del Coronado entrance

Tenth Annual Sessions *of* A. G. A. Convene *at* Atlantic City



Along the Boardwalk at Atlantic City

AS this issue of *Western Gas* comes off the press several thousands of gas men of the nation and distant foreign sections are already en route to the gathering point of the industry—Atlantic City—where the American Gas Association holds forth from October 8 to 12 in its tenth annual convention.

Atlantic City is a general favorite as an East Coast convention site, and this year the entire Million Dollar Pier is again at the disposal of the 5,000 or more delegates. Twenty-four general, technical and commercial sessions are being held on the pier, as are also the manufacturers' exhibits. Locations for the various sessions are given in the accompanying program.

It is somewhat customary to describe each succeeding convention program as the ablest of its kind, but there is no exaggeration involved in saying that the A. G. A. Tenth Annual Convention program is exceptionally favored in the array of national talent which has been brought together for both general and sectional meetings. To indicate only a few of the offerings in the general sessions, the following may be given special mention:

"Education and Industry," by Dr. John Grier Hibben, president of Princeton University; "The Ultimate Test" by George B. Cortelyou, first president of the American Gas Association, chairman of the Joint Committee of National Utility Associations, and president of the Consolidated Gas Company of New York; "Regulative Problems" by William A. Pendergrast, chairman of the New York Public Service Commission; "Constitutional Rights," by Silas Strawn, president of the American Bar Association; "The Editor and the Public Relations Man," by Walter M. Harrison, president of the American Society of Newspaper Editors; and the President's Address, by Oscar H. Fogg, vice-president of the Consolidated Gas Company of New York.

Afternoon sessions are being given over to sectional meetings, where specialized problems of the accounting, publicity and advertising, commercial, industrial, natural gas, and technical sections will be reviewed.

Of particular interest among the special meetings is that of the Natural Gas Department, called by Chairman Samuel W. Meals. The Advisory and Managing committees of this Department are meeting Tuesday noon, October ninth, their session being followed by a special conference of natural gas men.

As an innovation in A. G. A. convention routine, this year's session is officially "going on the air" in a special evening program, Wednesday, October 10. A short address by George B. Cortelyou, chairman of the Joint Committee of National Utility Associations, will feature this program, which is being broadcast over the "Blue Network" through the cooperation of the National Broadcasting Company. Musical entertainment completing the program numbers selections by Miss Dorothy Speare, American soprano, and George Olsen's orchestra.

The Publicity and Advertising Section this year introduces an important element into the deliberations of the A. G. A. in its full treatment of financial aspects of the industry. Four ad-

dresses on different phases of this general subject are being given by authorities of national prominence.

Of interest to the industrial gas men and executives is the special meeting of the American Society for Steel Treating to be held the Friday after the convention terminates. This Society will be in convention at Philadelphia during the same week as the A. G. A. conclave, and by special arrangement is introducing an extra session devoted largely to industrial gas topics. R. G. Guthrie, of the Peoples Gas Light and Coke Company, will present a paper. The A.G A. will also have a larger exhibit at the Steel Treaters convention.

At the Women's meeting on Tuesday afternoon, October 9, Miss R. G. Stone, editor of The Ohio Gas and Oil Men's Journal, will preside.

The manufacturers exhibition this year is probably the largest showing of gas appliances and equipment ever held in the United States. Demands for space have exceeded those of any previous year, and more than 275 manufacturers were expected to have booths on the Million Dollar Pier.

Convention entertainment, arranged under the general direction of W. J. Clark, chairman of the entertainment committee, includes dancing to George Olsen's orchestra in the Ballroom of the Million Dollar Pier on Tuesday and Wednesday evenings. Thursday evening on the Steeplechase Pier, which will be given exclusively to the entertainment of A.G.A. visitors for that night, and golfing privileges at the Seaview Golf Club during the period of the convention.

The 1928 A.G.A. convention program of general sessions follows:

First General Session

Tuesday Morning—October 9

10:00 O'clock

Hippodrome, Million Dollar Pier

Opening Remarks: President Oscar H. Fogg, Vice-President, Consolidated Gas Co. of New York, New York, N. Y.

Address: Welcome—Hon. A. Harry Moore, Governor of New Jersey.

Report: Treasurer, Clifford E. Paige, Vice-President, The Brooklyn Union Gas Co., Brooklyn, N. Y.

Report: Managing Director, Alexander Forward.

President's Address: President Oscar H. Fogg, Vice-President, Consolidated Gas Co. of New York, New York, N. Y.

Report: Nominating Committee—H. H. Ganser, Chairman, Vice-President and General Manager, Counties Gas and Electric Co., Norristown, Pa.

Election.

Address: Better Appliances—The Laboratory's Contribution—J. S. DeHart, Jr., President, Isbell-Porter Co., Newark, N. J.

Address: Economic Aspects of Laboratory Approval Seal—B. J. Mullaney, Vice-President, American Gas Association; Vice-President, The Peoples Gas Light and Coke Co., Chicago, Ill.

Address: Liberty and Opportunity—Silas H. Strawn, Past President, American Bar Association, Chicago, Ill.

Executive Session: (Only Company Member Delegates Eligible to Attend.)

Election of Company Members.

Election of Directors.

Election of 1928 Nominating Committee.

Election of Committee on Resolutions.

Second General Session

Wednesday Morning—October 10

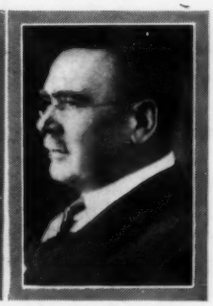
10:00 O'clock

Hippodrome, Million Dollar Pier

Report: Committee on President's Address.

Address: The Editor and the Public Relations Man—Walter M. Harrison, President, American Society of Newspaper Editors, Oklahoma City, Okla.

Oscar H. Fogg
President, A.G.A.



B. J. Mullaney
Vice-President

C. E. Paige
Treasurer

Alexander Forward
Managing Director

Address: Regulative Problems—Hon. Wm. A. Prendergast, Chairman, New York Public Service Commission, Albany, N. Y. (Introduction by Hon. H. G. Wells, President, National Association of Railway and Utilities Commissioners, Boston, Mass.)

Address: The Newer Competition and How the Gas Industry Must Meet It—Prof. Herbert B. Dorau, Northwestern University, Chicago, Ill.

Address: Estimating Future Growth—Carl Snyder, Statistician, Federal Reserve Bank of New York.

Evening Meeting

Wednesday Evening—October 10

8:00 O'clock

Hippodrome, Million Dollar Pier

Music: George Olsen's Orchestra.

Soloist: Miss Dorothy Speare, soprano.

Address: Education and Industry—Dr. John Grier Hibben, President, Princeton University, Princeton, N. J.

Soloist: Miss Dorothy Speare.

Music: George Olsen's Orchestra.

Address: The Ultimate Test—George B. Cortelyou, Chairman, Joint Committee on National Utility Associations; President, Consolidated Gas Co., of New York, N. Y.

Soloist: Miss Dorothy Speare.

Music: George Olsen's Orchestra.

Dancing.

Third General Session

Thursday Morning—October 11

10:00 O'clock

Hippodrome, Million Dollar Pier

Reports: Presentation of General Committee Reports will be very brief, embodying only a summary of work accomplished and recommendations made by the committees.

Customer Ownership Committee—C M. Hamilton, Chairman, Henry L Doherty and Co., New York, N. Y.

Accident Prevention Committee—E. R. Dobbin, Chairman, Empire Gas and Electric Co., Geneva, N. Y.

Committee on Education of Gas Company Employees—E. B. Luce, Chairman, Consolidated Gas Electric Light and Power Co., Baltimore, Md.

Rate Structure Committee—G. I. Vincent, Chairman, Vice-President, Syracuse Lighting Co., Syracuse, N. Y.

Rate Fundamentals Committee—William L. Ransom, Chairman, New York, N. Y.

Committee on Cooperation with Educational Institutions—W. G. Gribbel, Chairman, John J. Griffin & Co., Philadelphia, Pa.

Address: Research—and a Greater Gas Industry—Arthur D. Little, President, Arthur D. Little, Inc., Cambridge, Mass.

Address: Utility Organization and Service—Arthur W. Thompson, President, The United Gas Improvement Co., Philadelphia, Pa.

Address: Women's View of the Gas Industry—Katharine Fisher, Director, Good Housekeeping Institute, New York, N. Y.

Report: Committee on Resolutions.

Report: Time and Place Committee—1929 Convention—John A. Weiser, Chairman, Peoples Light Co., Pittston, Pa.

Presentations: Award of McCarter Medals for Life Saving—Thomas N. McCarter, President, Public Service Electric and Gas Co., Newark, N. J.

Award of Beal Medal—T. R. Beal, President, Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y.

Closing Remarks: Thomas N. McCarter, President, The Public Service Electric and Gas Co., Newark, N. J.

Using Underground Reservoirs *for* Natural Gas Storage

By A. F. BRIDGE *and* H. P. GEORGE*

THE tremendous flush production of oil in the development of many California fields and the waste of natural gas incident thereto, has been a source of grave concern to those interested in the natural gas industry. Several hundred billion cubic feet of gas have been blown to the air during the past eight years alone. Although not generally realized, this involved a double waste—the value of the gas as a fuel and its pressure energy, which should have been employed to expel oil from the underground reservoirs. Serious thought has been given this matter by petroleum and natural gas engineers, and rapid strides have been made in recent months toward a reduction of this economic waste.

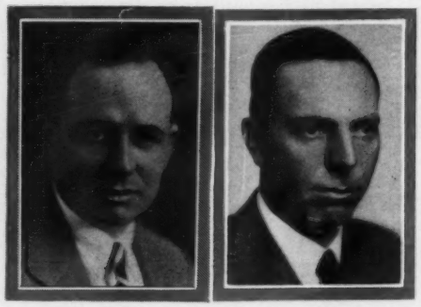
Practically all of the natural gas produced in California is what is termed casing head or wet gas. Casing head gas occurs in oil bearing formations, dissolved in the crude oil. This physical solution of gas and oil is conducted through the well tubing to the surface, where it is caused to effervesce by release of pressure, thus separating the two constituents. Hence, in general, the rates of production of oil and gas are interdependent, and one cannot be varied without seriously affecting the other. Since the oil production of a normal well has a value several times as great as that of its gas output, the demand for oil will determine the rate of production of both gas and oil, if economic considerations alone control the producing operations.

When the casing head gas supply exceeds the volume necessary to supply the market, there are available only two methods of elimination or reduction of gas wastage,

(1) Curtailment of the joint production of oil and gas.

(2) Storage of the excess gas in such reservoirs as are available.

The first method is practical only in fields where the acreage is held by a few companies, and co-operative regulation of drilling and producton may therefore be effected. In the fields where town lot development exists, there is such a diversity of interests in the race to recover oil that control of production is a difficult problem. Some of the larger



A. F. Bridge *H. P. George*

operators have already curtailed production in certain fields with the result that gas wastage has been materially reduced in this manner.

In attempting to employ the second method outlined above, we are immediately confronted with the problem of securing a suitable reservoir. Those not familiar with the problem may inquire why gas holders cannot be constructed to store the excess supply accumulating over a period of months or years, as is done with oil and its refined products. This is an economic impossibility because the commodity is a gas and not a liquid. It is not feasible to provide gas storage above ground of greater capacity than the cumulative difference between supply and demand which occurs in one or two days.

This will be evident from the following relations between cost of storage and value of commodity, for gas and oil.

Commodity	Volume Unit	Nominal Value in Field	†Cost of Storage per volume unit	Ratio of Storage Cost to value of commodity
Natural Gas.....	M.Cu.Ft.	$0.10	$75.00	$750.00
Crude Oil	Barrel	$1.00	0.35	0 29

†Holders and tanks of large size.

During recent months, for instance, unmarketable natural gas has exceeded 200,000,000 cu. ft. daily. Artificial reservoirs to store only one day's waste would cost $15,000,000.

However, natural reservoirs of very large capacity are available in partly drained oil and gas fields, and it is believed possible to store, and eventually to recover, a considerable part of the surplus gas by utilizing certain of these fields. Storage is accomplished by compressing the gas to pressures sufficient to inject it into the oil sands against the formation pressure, through wells which are taken off production for this purpose. In the order of their importance, the factors which determine the suitability of a field for this purpose are:

1. Limited number of operators controlling a closed structure, so that joint storage and withdrawal is possible.
2. Presence of sand which will permit injection at a practical input rate per well.
3. Gas transportation facilities from sources in which surplus originates to the field under consideration.
4. Proximity to market.
5. Injection pressure required.
6. Mechanical condition of wells.

There are probably not more than seven fields in the Los Angeles Basin which reasonably fulfill the above requirements. In all cases very substantial expenditures will have to be made to compress gas for injection.

EXPERIMENTS IN GAS STORAGE

An important step toward gas storage was taken by the Standard Oil Company of California, and the Southern Counties Gas Company during the summer of 1927, when surplus gas of the Southern Counties Gas Company was transported to and injected into the oil sands in the West Coyote field on property controlled by the Standard Oil Company. During that summer a total of 500,000 M.C.F. was stored under-ground.

Oil production engineers closely observed both the oil and gas production of oil wells during this period of injection, and sufficient back pressure was held on all wells to prevent the escape of gas from the formation by channeling or by-passing from the point of injection through the formation to other wells.

During this same period experimental work was conducted to determine the effect on oil recovery of gas injection into the oil sands, and the resulting re-pressuring of these sands. Considerable

*Delivered before the Technical Section of the Pacific Coast Gas Association at Coronado, Calif., September 19. A. F. Bridge is executive engineer for the Southern Counties Gas Company; H. P. George is general superintendent of natural gas production and transmission for the Southern California Gas Company.

of this work was carried on in the field and actual tests made on producing wells. From results so far obtained, many oil production engineers are convinced that gas injection or re-pressuring pays dividends in increased ultimate oil and gasoline recovery. From this angle they have become intensely interested in gas storage projects. Gas utility engineers are interested from the standpoint of storing gas which would otherwise be lost. Two important factors must be considered for each storage project:

(1) Can a substantial part of the injected gas be recovered.

(2) Can recovery be effected at a time when a market exists.

Gas injection as applied to increasing oil recovery makes use of two physical characteristics of gas.

(1) Gas in solution in the oil increases its fluidity, and thus reduces the force necessary to move oil through the porous formation in which it is contained; and

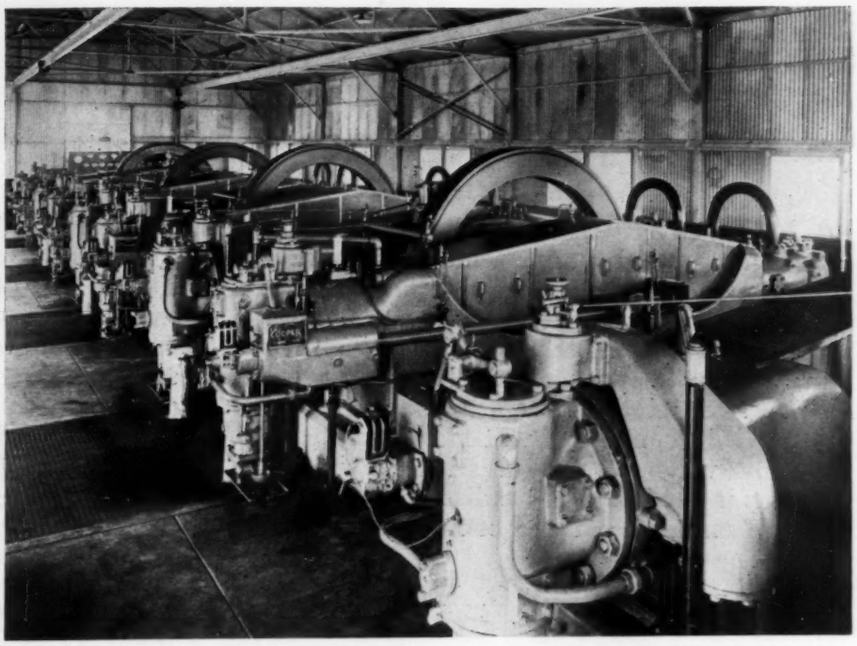
(2) The energy of the gas is used in moving oil into the well and bringing it to the surface.

It is now generally recognized that gas dissolved in oil is the principal factor in its movement through the sands into the well. The illustration of the soda water syphon filled with carbonated water being emptied through the glass tube by the pressure of the dissolved gas, has been used, not only to explain how oil is forced out of a well after it enters the casing, but also to explain the more important process, that of moving the oil from the voids in the sand into the casing.

The frictional resistance of the sand to the flow of oil opposes the pressure energy of the contained gas, and as this energy is dissipated by release of gas, a condition of equilibrium is finally reached so that oil will no longer flow into the well. With oil production methods used in the past, it is estimated that an average of only 25 per cent of the oil content of the California structures has been recovered, 75 per cent remaining in the formation.

At this point the gas injection or repressuring process appears in the picture, and an artifical means of adding new energy to the oil sand is provided by injection of gas into a "key" well, thus creating a pressure differential between that point and the oil producing well, sufficient to overcome frictional resistance of the formation, so that oil will again flow into the well. A "key" well is so located that it is surrounded, as far as possible, with oil producing wells.

Of course, it is not necessary to delay gas injection until the oil is depleted; in fact, gas injection at any stage of oil production tends either to increase current production, or to arrest decline, with an increase in ultimate recovery in either case.



Marland Oil Company plant at Seal Beach, California, containing typical installation of Cooper engines, one unit being used for repressuring at approximately 1500 pounds pressure

Gas storage and repressuring of oil sands has proven so sound economically, that the summer of 1928 finds the natural gas utilities, and many of the large oil producing companies, actively engaged in such operations. Southern Counties Gas Company is having surplus gas stored by Standard Oil Company in the oil sands in the West Coyote and Montebello fields and by Union Oil Company in the Dominguez and Brea Canyon fields. The most extensive repressuring project under way at this time is the co-operative effort of Shell Company and Union Oil Company in Dominguez oil field, where injection operations are being conducted on a large scale. Here approximately 20,000 M.C.F. daily is being injected. Union Oil Company is also active in the Brea Canyon, Orcutt and Midway Sunset fields, Standard Oil Company in Buena Vista Hills and Elk Hills, Honolulu Consolidated in Buena Vista Hills and Texas Company in Shields Canyon field

GAS RECOVERY

In the event gas injected into the formation belongs to pipe line or utility company, the volume which it may expect to recover is established in the following manner:

The experienced gas production decline curve of the field is projected into the future, and this establishes the normal aggregate future production and the rate thereof. Any increase in actual future gas production, as compared with this projection, determines the recovered stored gas.

Gas storage in the Los Angeles Basin fields so far has been confined to oil sands, and the storage feature combined with repressuring to increase oil recovery. In the Buena Vista Hills, however, Southern California Gas Company is storing gas in a partially depleted dry gas zone on lands owned by Standard Oil Company. This last project is strictly a storage measure, the formation acting as a high pressure holder.

Where gas is stored in a dry gas zone, the method of determining recovery differs from that heretofore outlined for a casing head field, and is as follows:

The recovery stored gas is that volume which, when withdrawn from the formation, reduces the rock pressure to the point where it stood when injection began.

Projects such as the foregoing, although of great value in reducing wastage, have their limitations due to variables of natural gas production and utilization, and therefore do not afford a complete solution of the problem of gas conservation.

The supply of natural gas available to distributing companies in Southern California varies over a wide range, the fluctuations being wholly unrelated to the market for gas. These fluctuations result from the discovery of new oil fields, the increase or decline of existing sources, the curtailment or shutting in of

(Continued on Page 51)

EDITORIAL

Let's Share the Convention!

AMERICAN Gas Association annual assemblies derive their principal importance from the fact that they are national, in every sense of the word. Every section, every industry which even remotely comes within the gas family, finds its place in the deliberations of the A. G. A. Specialized problems have their consideration in committee work, and the broader problems which command attention from all elements in the industry are discussed by men of national eminence at the convention's general sessions.

In this matter of the A. G. A.'s national character it is strictly in point to urge that due thought be given to locating the annual convention from year to year so as to emphasize the national organization's all-inclusiveness. Western members of the A. G. A. who since its organization have been making the annual pilgrimage to the eastern seaboard at convention time, feel that it is in place to ask "Why not a western convention?" Or, more specifically, "Why not select San Francisco, a centrally situated west coast community, as convention site for 1929?" The western gas industry would benefit from such a contact with the national association; eastern members of the A. G. A. would find inspiration in a direct touch with the progress being made on the Coast. Nothing could do more to round out the national service of the A. G. A.

National conventions, both political and industrial, are coming to the west in increasing numbers, and accommodations are fully comparable to those of other centers. In San Francisco, for example, the Civic Auditorium and adequate hotel facilities would be admirably adapted to A. G. A. needs.

This suggestion is not made in a "see America first" vein. There is nothing impractical about bringing the A. G. A. convention to the west coast. If it be argued that exhibit space demand would suffer it can be countered that western manufacturers of gas equipment and appliances, of whom there are no small number, would take space at a national convention closer to home. Eastern gas company members, it is true, would face the same expense that western companies have been bearing for years in sending their employees, but this is only fairness, and the pleasures and benefits of the trip would compensate.

Better Salesmanship in the Offing

THERE is scarcely a gas company which has not taken out its policy on appliance selling and given it a touch of modernization within the last few years. Selling is in the air, and no one can escape developing a sales consciousness in the face of the existing need for protecting and extending our domestic services.

The industry is now thinking straight on the subject of selling and is going about the next logical step—reducing gas appliance merchandising to a practical program for the utility.

Nothing can do more in this effort than the training of appliance salesmen, and the industry is awaiting with expectation the beginning of the A. G. A. course for salesmen, which will be available shortly after the convention. The course has been prepared along lines dictated by the findings of a nation-wide survey, in the course of which trained investigators observed salesmen in action, giving a basis for constructive analysis of weaknesses in present methods.

Some of these defects ascribed to present selling, apparent from the survey referred to, are:

That the gas appliance salesman does not sufficiently identify himself with the company he represents.

That he sells only *appliances,* rather than the convenience and comfort attained through their use.

That his selling talks proceed aimlessly, without a definite plan of demonstration for each appliance.

That his stock of printed material is inadequate.

That he cannot *close* sales that are ready for closing.

A practical course in selling, brought down to cover the specific situations encountered by the gas company sales representative, will pay dividends to the company which takes advantage of it. Where personnel programs already include sales courses the A. G. A. contribution should be an invaluable supplement, and where sales training has been neglected the new course should provide the stimulus and the means for conducting such training.

If the A. G. A. course in salesmanship can get under the skin of the rank and file of company sales employees and improve their methods, the industry may expect results in load building that have no parallel in the past.

F. S. Wade

Gas Industry's Future Lies *in* Selling

By F. S. Wade
President, Southern Counties Gas Company

At its closing session at the Coronado, Calif., convention in September the Pacific Coast Gas Association held a general sales conference with executives of West Coast companies participating in the speaking program. Mr. Wade's address, published on this page, is typical of those presented in its insistent emphasis that the gas company must actively and aggressively engage in sales promotion to maintain its services against modern forces of competition.

IT HARDLY seems possible after the expressions heard on all sides at this convention that any question can remain as to the importance of gas sales promotion in our industry. Are we not all agreed that the promotion of gas sales is of vital importance to the future of the gas business? This seems so obvious a matter that I am not inclined to spend much time urging that sales promotion is important—but rather let us consider how can the sale of gas best be promoted.

However, lest I have not done my duty by the subject assigned; and if there are some still remaining who believe the sale of gas will take care of itself without any particular effort on our part, may I point out a few well known facts:

Practically all of the recent development in the realm of household economics has been away from the interests of our business. The housewife no longer bakes her own bread in her own oven; the family laundry more often than not is sent out to the central steam laundry; canned and largely pre-cooked vegetables, fruits, meats and fish are more and more taking the place in our dietary formerly occupied by the fresh varieties, which need substantial cooking in the home. The competition of low priced oil in improved burners and of electricity under special systems of rates for household use other than lighting, is too well known to require more than mention here—and both of these vital competitors of ours are being exploited and promoted by expert salesmanship liberally applied.

With these actual conditions confronting us, may we not safely devote our time to considering how we should promote sales, rather than to whether or not it is important to promote them.

First it seems to me, we should arrive at some more or less definite idea at the beginning of each year as to how much of our gross income can be reasonably assigned to the promotion of our sales through all channels. I would not attempt to name any arbitrary figure as being a proper one, but I think we are quite safe in assuming that in the past the gas industry has spent far too little to hold its present business and add new. Based on the experience of the company with which I am associated, I would say that a fair allowance for sales promotion in all forms lies somewhere between 3 per cent as a minimum and 5 per cent as a maximum of the gross domestic and commercial income.

Having arrived at a fair allowance for a given situation, which will of course vary widely with conditions, we come to the question of how most effectively this money can be spent. Here again the conditions surrounding the individual company will vary, and I can only give my own best judgment, based on experience with our own company.

There are three major avenues of sales promotion open to us—personal solicitation; advertising; improved rates. Two-thirds of our budget I would assign to solicitation; one-third to advertising; while the cost of rate improvement can properly be absorbed in our general overhead.

As first, and by all means the most important, we should place personal solicitation. Under this head I would put every form of personal contact between gas company employees and the public, which has the stimulation of gas sales as its object.

We have found the most valuable first step in this direction to be appliance and usage survey, made in the first instance by some employee, not a salesman, who is making a service call on the customer. From the information thus gained, a sales representative can intelligently attack the problem of stimulating more gas usage by introducing more and better appliances.

The question of what agency can most effectively sell gas appliances has been the subject of many debates over many years. The ideal solution will perhaps be found some day. Unquestionably however we should make use of every available outlet for gas appliances and not restrict ourselves to any one.

We feel that a salesman can accomplish more for the gas company when he has some tangible gas using appliance to sell than when he has only an intangible "service" to offer. Consequently we believe the gas company itself should energetically endeavor to sell a few carefully selected appliances. At the same time every effort must be made to obtain dealer cooperation by fair methods of competition, retail price maintenance and other means.

From our experience it appears that there is no incentive so effective in obtaining keen sales efforts as a fairly liberal commission paid on appliance sales. Time does not permit a discussion of the details of our commission plan, but I am convinced from our experience that the most effective sales promotion plan can be built around some carefully worked out commission plan.

Next in importance to solicitation we should obviously place advertising. Regular space at regular periods in established newspapers of course holds first rank as an advertising medium. Special and timely campaigns, using direct mail and bill enclosure appeals have been found very effective. I would not presume to advise on the highly specialized technique of advertising—we have many experts to do that for us. It seems to me, however, that we have been over-inclined to advertise gas and gas appliances, rather than the delightful, valuable and healthful products and by-products obtained by the liberal use of

(Continued on Page 44)

Corrosion *of* Pipe Lines

A Review of Electrical Data Gathered in a Bureau of Standards Cooperative Study *

By K. H. LOGAN[1], L. F. ATHY[2], C. T. LANGFORD[3]

THE corrosion of underground structures has frequently been divided into two classes, one designated as soil or self corrosion and the other as electrolysis.

Under oil corrosion we have included losses due to the chemical attack of the soil on the pipe and the galvanic corrosion caused by differences in the pipe material, or in the surrounding media, such as the soil and water, etc. The term electrolysis has been used to designate the corrosion caused by stray currents from street railways and direct current power sytems. When appreciable currents have been detected on the pipes it has usually been asumed that they originated in a power house or substation.

36-MILE LINE STUDIED

The Bureau of Standards recently had an opportunity to co-operate with a pipe line company in the study of conditions along an oil line about 36 miles in length. The purpose of this study was to collect all available data on conditions which might have influenced the corrosion of the pipe lines, some sections of which failed on account of corrosion within nine years. A number of lines of investigation were pursued. The following article, however, is confined to a discussion of the significance of the electrical data collected in the course of the investigation and especially that obtained by the authors during the early part of their work.

At the time the electrical tests were made the line was open at both ends and not connected with any wells or any other pipe line. The nearest street railway system was 35 miles away. The accompanying sketch shows the data obtained on about four miles of the line. For convenience in discussing these data, certain points along the line have been lettered.

The first measurement of current was made at a point about one-half mile north of the southern end of the line. This is at location A in the accompanying drawing. The current here on one day was 0.33 ampere and on the following day 0.27 ampere flowing northward. These currents were computed from the drop of potential along approximately 20 feet of pipe and the resistance of the pipe as indicated on tables prepared from the tests of a large number of samples of steel pipe. Measurements on several sections north of the first test point showed that the current on each succeeding section was less until at the sixth section the gradients taken from the two ends of the pipe section over 9 and 11 foot lengths indicated currents flowing in opposite directions as indicated at C. Between locations C and F the current flowed southward, decreasing from a value of 0.58 ampere at F to 0.09 ampere a few pipe-sections north of where the reversal of direction was observed. All the pipe sections between locations 2A and E showed corrosion. Several lengths at D had been replaced on account of failures. In a general way therefore there seems to be a relation between the loss of current and the corrosion of the pipe.

A further indication that the pipe is discharging current is shown at location B. Two similar non-polarizable electrodes were placed 10 inches apart in the earth in a line normal to the pipe, the nearest one being close to but not in contact with the pipe. The direction of the earth gradient as shown by voltage measurements between these electrodes indicate that current is flowing from the pipe on both sides.

Passing to point G where another failure in the line occurred, it will be noted that the current is flowing south and that the current north of the failure was 0.7 ampere while just south of the failure it had fallen to 0.57 ampere, indicating a discharge of 0.13 ampere. Such a discharge would remove 2½ lbs. of steel per year or the equivalent of 0.4 foot pipe line. Between points G and H the current remains substantially constant and the pipe was found to show little corrosion. At H another leak occurred and a test a few lengths north of the leak showed a current of 0.78 ampere flowing toward the leak, indicating a loss of .08 ampere at the corroded area. At about 1¾ miles further north, another leak occurred on the north side of which the current was 0.32 ampere flowing south while on the south side the current had decreased to 0.14 ampere flowing in the same direction. Between I and H the current gradually builds up to 0.77 ampere as stated above.

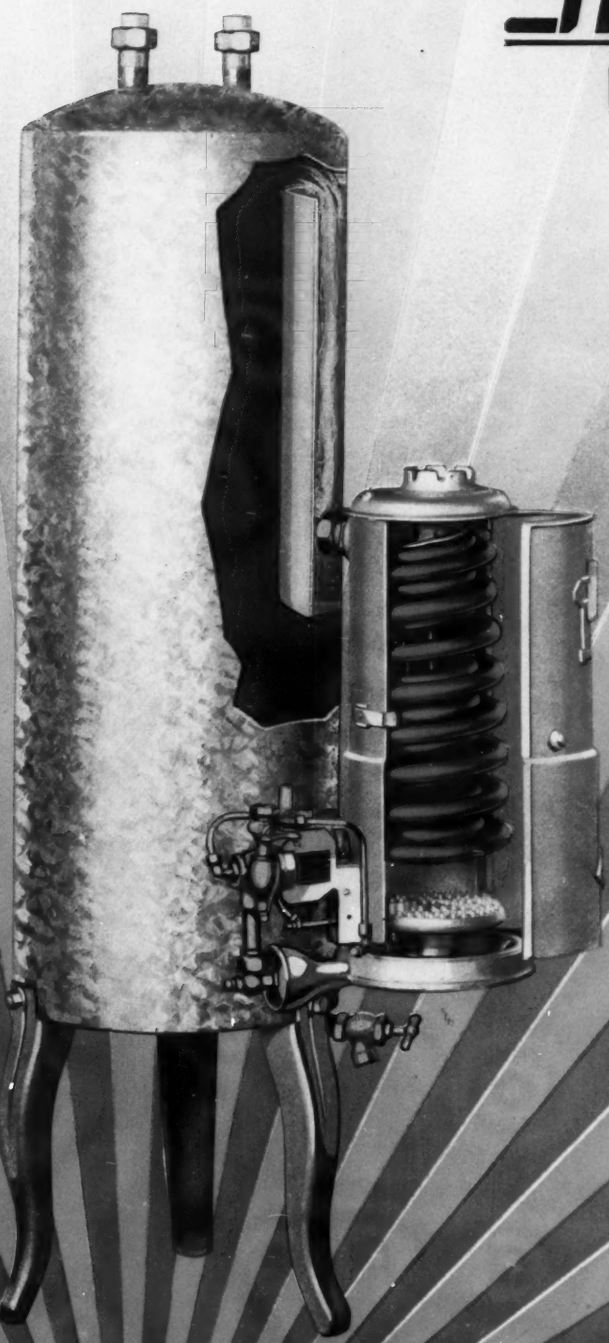
WHERE CORROSION WAS NOTED

Circumstances did not permit the examination of all of the pipe at frequent space intervals, but tests were made at intervals of about a mile over thirty miles of the line. Several reversals in direction were observed and usually corrosion was found where the currents in the pipe fell off. Two exceptions were noted, one where currents flowed in the pipe toward a steam railroad track from either side with no indication of corrosion, and another where current flowed away in the pipe from a badly corroded section in either direction. There were a few locations where there was a gradual diminution of current without serious corrosion, but these could be accounted for by assuming a slight and nearly uniform corrosion over a considerable number of pipe lengths. Tests on 19 miles of line running east and west show currents, the largest observed being 1.4 amperes. Circumstances did not permit a careful examination of the condition of this line. The corrosion seems to be caused by the formation of large galvanic cells formed by the line passing through soils which differ chemically or in moisture content with respect to which the iron has different potentials. In any such cell the part of the pipe from which current passes into the soil becomes an anode and corrodes; while some other part of the pipe to which cur-

* Publication approved by the Director of the National Bureau of Standards of the U. S. Department of Commerce.

1. Electrical Engineer, U. S. Bureau of Standards.
2. Research Geologist, Marland Companies.
3. Research Chemist, Marland Companies.

The New SPEE DEE BOILER



THIS new Spee-Dee Boiler embodies the first real improvement in range boiler design and efficacy since the range boiler became in use. It also embodies the biggest single advance in range boiler construction since the development of the gas water heater. It set a new record in water heating speed and does not radiate as much as an ordinary range boiler.

The Spee-Dee Boiler is so simple, so unique and so completely meets the long existing need for efficient method of hot water storage that you wonder why it had not been developed years ago. A sensational range boiler to demonstrate! Actually sells itself because of such obvious advantages.

In addition, the backing of a company of more than 23 years experience in the construction of gas water heaters, is a safeguard for the distributor's investment and a guarantee of the stability of his business.

The Spee-Dee Boiler is your opportunity for more water heater sales. Order one, get your customers' opinion and ask about our merchandising plan.

Booth 346, Young's Pier
A. G. A. Convention

© 1928 The Cleveland Heater Co.

THE CLEVELAND HEATER CO
1900 W. 112th St. Cleveland, Ohio

The

REX-PATROL AUTOMATIC WATER HEATER

UNPRECEDENTED consumer demand emphasizes the remarkable triumph of manufacturing and sales success of this wonderful new Automatic Tank Water Heater. Its amazing success is not confined to one city or state but reaches from coast to coast. It is universal.

To meet modern demand, a water heater must be dependable and efficient over and above its automatic principle. It should eliminate all possible work, but more so it must be safe.

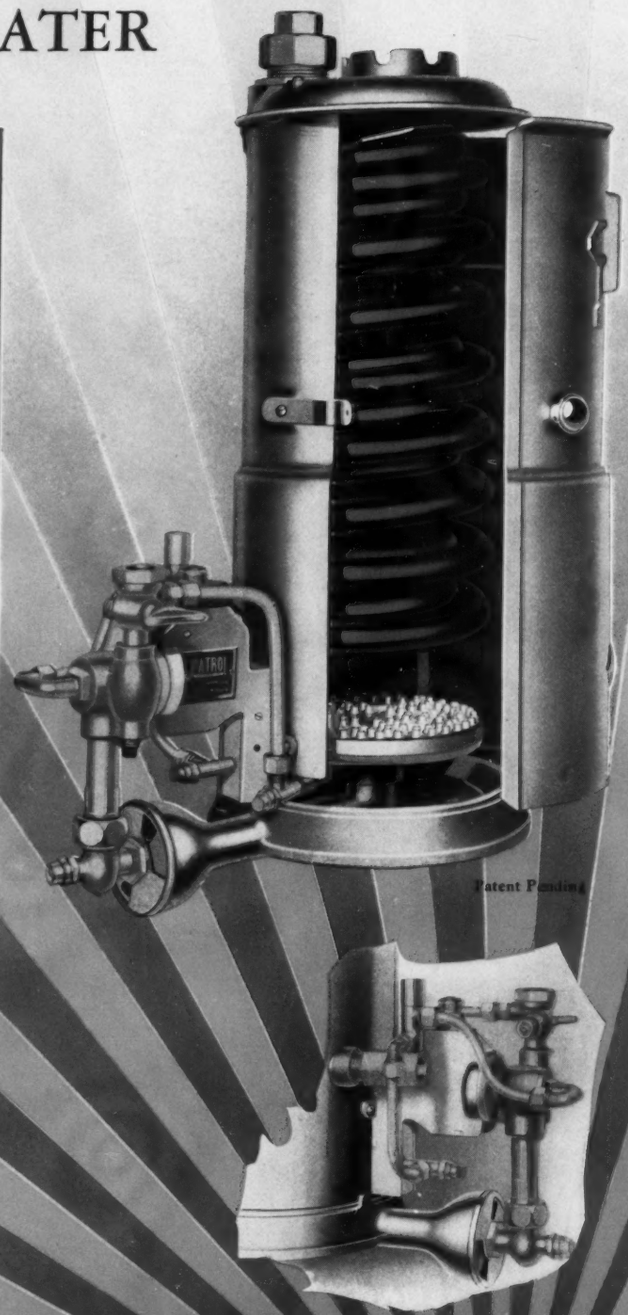
The Rex-Patrol Automatic Water Heater meets all these requirements in addition to the fact that it is the lowest priced automatic water heater on the market.

There's no need to tell you how much of an advantage it is to sell an automatic water heater. It is recognized that people do appreciate self-action hot water service. And, when in addition it combines numerous other valuable exclusive features, it is self-evident that the Rex-Patrol offers unusual opportunities.

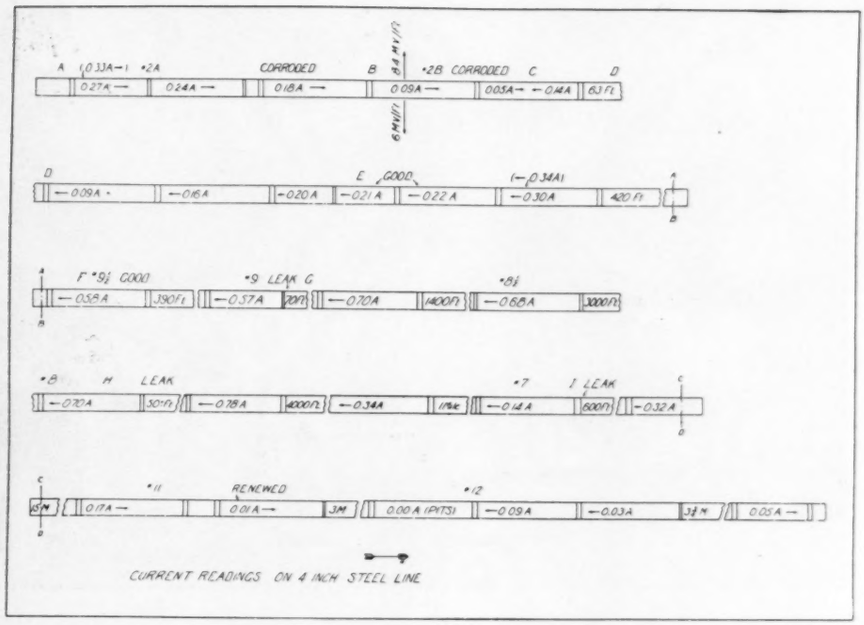
Think of the sales possibilities of a water heater of this character. Write us today and let us tell you specifically what we will do for you as a Rex-Patrol Distributor to help you sell Rex-Patrol Automatic Water Heaters and increase your gas send out.

Booth 346, Young's Pier
A. G. A. Convention

© 1928 The Cleveland Heater Co.



THE CLEVELAND HEATER CO
1900 W. 112th St. Cleveland, Ohio



Sketch at right shows data obtained along four miles of pipe line investigated by Bureau of Standards in corrosion study.

rent is flowing from the soil becomes a cathode and is protected against corrosion.

The possibility of such currents as described above has long been recognized. Some years ago a series of measurements of galvanic potentials of similar electrodes in different soils was made at the Bureau of Standards and it was found that potential differences of the order of 30 millivolts were not uncommon. This value is sufficient to account for the observed currents if the resistance of the contact between the earth and the pipe is negligible.

Recently Dr. H. D. Holler made a series of determinations of the difference of potential between a platinum and a calomel electrode in a number of soils. His measurements indicate that two similar electrodes in different soils which are in contact with each other may differ in potential by as much as 0.4 volt.

Slight inconsistencies in the observed currents are to be expected since pipes of the same size may vary several per cent in resistance and because the method of testing involved small thermo-electromotive forces. However, there is a consistency in the observations which gives assurance that current flows on the pipe lines in sufficient quantity to account for considerable corrision at points where it is discharged to the earth.

It is not to be assumed that all of the corrosion found on the pipe line can be accounted for by currents such as were observed. Experiments with short pieces of pipe buried in soils show that in some soils concentration cells caused by differences in the composition or physical condition of the surrounding soils, or minute galvanic currents caused by non-homogeneous metal, rapidly destroy the pipe. The galvanic currents whose circuits may involve several or many lengths of pipe have had less consideration and the purpose of this paper is to point out the probability of such currents and to suggest that their importance be studied. If they are found to be an important factor in pipe line corrosion, steps to prevent such currents might be taken.

Two tested remedies for the corrosion caused by electric currents are available. The currents may be reduced by increasing the resistance of the pipe line or the resistance between the line and the earth.

Insulating joints if installed at frequent intervals will reduce the currents, but as some current will leak around the joints the total corrosion per unit of current may be greater than where the pipe is a continuous metallic circuit. Only by careful tests is it possible to determine the effectiveness of insulating joints.

Insulating the pipe line by means of a bituminous coating has both advantages and dangers. A good protective coating will reduce the areas of exposed pipe which may become either anodic or cathodic. However, it is practically impossible to obtain a coating without flaws and injured spots. If these weaknesses in the coating occur at cathodic points, where the pipe picks up current, they do little harm because they reduce the total resistance between the pipe and the earth but slightly. If they occur at points where the pipe is anodic, i.e., has a tendency to discharge current, the discharge results in a hole in the pipe.

Another possible way of protecting the pipe is to maintain it negative or cathodic to the earth at all points. This is a common method of protecting city pipe networks against stray currents from street railways. Under the name of cathodic protection it has been suggested as a remedy for soil corrosion in a bulletin of the Bureau of Mines and has been studied experimentally at the Bureau of Standards. We understand that an experimental test of this method is being tried on a pipeline in California. At present little is known as to the costs of such protection or as to the amount of current required per length of pipe. Under favorable conditions the same results might be accomplished by attaching zinc plates to the line at frequent intervals. In one case where this was tried* the formation of corrosion products on the zinc prevented the protection which might otherwise have been afforded.

Since the nature of the steps that should be taken to prevent corrosion accompanied by such currents as are discussed in this paper would differ considerably from methods applicable to the prevention of corrosion caused by the more minute galvanic cells usually assumed to be formed on buried pipes it seems highly desirable that a further study of pipe line currents should be made before a definite decision as to pipe line protection is reached.

* Personal communication from J. F. Putnam.

DURANGO, COLO., WILL HAVE NATURAL GAS

The Durango Natural Gas Company announces that it will start construction work immediately on the gas lines to supply Durango with natural gas. Gas will be supplied by the Mesa Grande Company from fields in northwestern New Mexico.

SOUTHERN COUNTIES GAS CO. OFFICIAL BACK FROM EUROPE

Fred Champion, fuel engineer for the Southern Counties Gas Company, with Mrs. Champion, returned recently from a three months trip to Europe.

BETHEL COLLEGE TO HAVE NATURAL GAS

Newton Gas Company, of Newton, Kansas, has piped Bethel College, located at that place for natural gas.

CAMPAIGN FOR NEW BUSINESS BY GAS SERVICE CO.

A total of 3,364 gas ranges was recently sold in a seven-weeks campaign conducted by the new business department of the Gas Service Company. Seventeen towns were represented in the campaign.

LEFT: The Oasis Apartments, Lewiston, Idaho — completely gas equipped. An eight months test for cost of gas service in each apartment of this insulated structure will be found on Page 42.

No Tenant Problem in This *All Gas* Apartment House

By HOWARD M. THOMAS

Gas Superintendent, Pacific Power & Light Company, Walla Walla, Washington.

THAT high gas rates and extreme weather conditions are no bar to economical heating of homes and apartment buildings, if these are properly insulated, has been proven by an eight month's test made at the Oasis Apartment House in Lewiston, Idaho.

The apartment house, a picture of which accompanies this article, was designed and built for and under the personal supervision of R. J. Jenks, a well known gas engineer. Mr. Jenks has for many years been an advocate of insulating buildings as a means of regulating temperatures to reduce the heating costs and to assure comfortable living and working conditions throughout the year. Therefore, in the construction of this building, the latest ideas in insulating against sound and heat loss were taken advantage of.

The building, which is a two-story frame structure containing four five-room apartments, is finished outside with magnesite and white rock and covers a ground area of 6,000 square feet. It stands in the center of a corner lot in the best residence section of Lewiston Heights, overlooking the town and the confluence of the Snake and Clearwater Rivers. The grounds are beautifully shrubbed and shaded by large trees. The back yard is equipped with a flood lighted croquet and tennis court.

In the basement, besides the usual meter, locker and laundry rooms, a large gas heated card or reception room is provided. This room is for the free use of the tenants and is in constant demand, since it eliminates the usual confusion and muss in the living rooms and leaves the house in perfect order at all times.

Heat is supplied by a gas-fired thermostatically controlled hot water plant, which is enclosed in an especially constructed closet centrally located in each apartment. In this way each tenant has the exact temperature desired at all times, day or night—an ideal situation and one which is especially favorable to the landlord.

In addition to the gas-fired boiler, each apartment has a fireplace equipped with a radiant type heater, which rounds out a real flexible as well as economical heating plant.

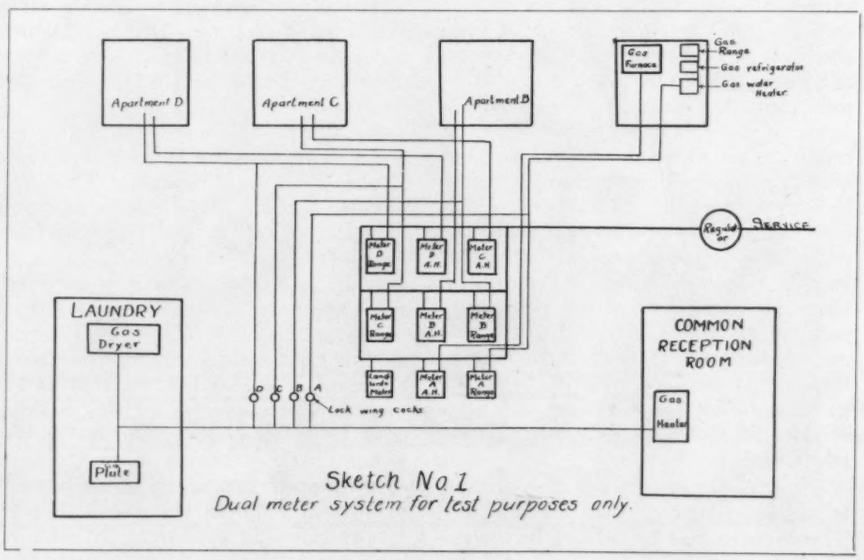
Automatic hot water storage systems of 20 gallon capacity are likewise located in properly designed closets of each apartment, insuring individual hot water service of the highest type.

The kitchens are equipped with the latest style combination gas range and refrigerator, both properly vented. Cooling water from the refrigerators can be directed either to the lawn or sewer, entailing no waste.

The laundry contains a gas-fired clothes drier, ironer, hotplate and washing machine. The gas piping and electric wiring are so arranged that each tenant uses both gas and lights from his own individual meters in the laundry, card room, or for front and back door lighting.

Sketch No. 1 gives the gas piping plan. The lights are controlled from switches in the apartment. The landlord has no worries, no bills to pay and the tenants take pride in keeping the laundry and stairways clean.

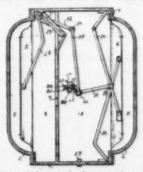
(Continued on Page 42)



Sketch No 1
Dual meter system for test purposes only.

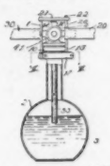
THIS MONTH'S PATENTS PERTAINING TO THE INDUSTRY

1,676,651. GAS METER. ARNO R. HURTIG, Stratford, Conn., assignor to American Meter Company, Incorporated, New York, N. Y., a Corporation of Delaware. Filed May 29, 1924. Serial No. 716,694. 3 Claims.



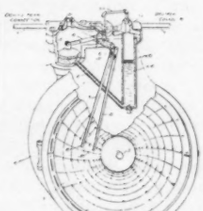
1. A meter comprising a body member having a partition, a diaphragm at one side of said partition, a crank shaft at the other side of said partition, a bell crank lever operatively connecting said diaphragm with said crank shaft, one arm of said lever being located at one side of said partition and the other arm of said lever being located at the opposite side thereof.

1,677,148. BY-PASS VALVE FOR GAS-WASHING APPARATUS. RUDOLPH ROSNER, Chicago, Ill. Filed Oct. 29, 1926. Serial No. 145,004. 5 Claims. (Cl. 261—121.)



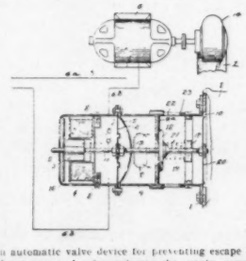
4. In combination a by-pass valve adapted to be mounted on the top of a neck portion of a container, a tube connected to said valve and extending downwardly through said neck portion and into a liquid in the container, said valve including an inlet adapted to be connected to said tube to deliver gas into said container, and an outlet connected to the interior of the said neck portion of said container for discharging the gas from the container after it has passed through said liquid, said valve having a body including a flange cooperable with the flange on the upper end of the neck portion of the container, and means for clamping said flanges together comprising a pair of cooperable clamp members disposed about said flanges and detachably anchored to each other.

1,681,174. ORIFICE METER. JOHN C. DIEHL, Erie, Pa., assignor to American Meter Company, Inc., New York, N. Y., a Corporation of Delaware. Filed Dec. 12, 1924. Serial No. 755,393. 4 Claims. (Cl. 234—34.)



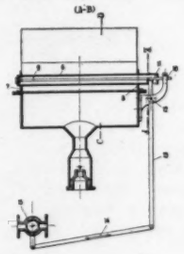
1. In an orifice meter, the combination of a chart having designations based on the square roots of differential and line pressures to be recorded and starting at absolute zero, pen arms operating on said chart; and means responsive to differential pressure and line pressure actuating said pen arms, said means adjusting said pen arms to the differential and absolute zeros.

1,673,976. SAFETY DEVICE FOR PREVENTING THE ESCAPE OF GAS. OSCAR GALAUP, Paris, France. Filed June 23, 1923, Serial No. 647,675, and in France July 4, 1922. 1 Claim. (Cl. 48—184.)



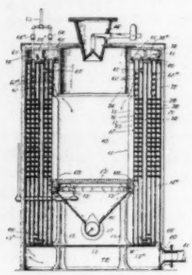
An automatic valve device for preventing escape of gas on the stoppage of a fan inducing the supply, comprising in combination a main suction pipe subject to the suction of the fan, with an opening therein, a tubular casing connected to said pipe through the opening, a flexible diaphragm closing the end of the tubular casing remote from the opening, a valve seating in said casing intermediate the ends, an entry for gas in the tubular casing on the side of the seating remote from the main suction pipe, an entry for air on the other side of the seating, a main valve adapted to take its seat on the said valve seating, a stem on one side of the valve and with its end connected to the flexible diaphragm, a stem on the other side of the valve, a guideway for said last mentioned stem, a compression spring between the guideway, and the main valve for pressing the main valve towards its seating, a plate valve on the end of this stem adapted in the closed position of the main valve to close the opening in the main suction conduit, a housing attached to the tubular casing beyond the flexible diaphragm, a solenoid in said housing, a core to the solenoid, a stem attached to the core and coming in axial alignment with the stem of the main valve attached to the diaphragm and connection to the windings of the solenoid for the purposes set forth.

1,675,966. REGULATING DEVICE FOR GAS AND AIR MIXING PLANTS, GAS-DELIVERY PLANTS, AND THE LIKE. FRIEDRICH WOLFF, Berlin, Germany. Filed May 21, 1925, Serial No. 31,978, and in Germany June 3, 1924. 3 Claims. (Cl. 48—180.)



1. A regulating device for use in connection with gas and air mixing plants and gas delivery plants, comprising a test burner arranged to produce a broad flame.

1,662,266. GAS-PRODUCING APPARATUS. VINCENT D. MCDONNELL, Chicago, Ill. Filed June 20, 1921. Serial No. 478,826. 12 Claims. (Cl. 48—64.)

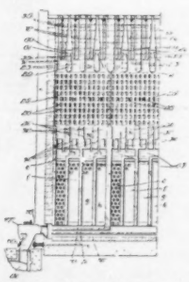


10. A gas producer of the character described, the interior whereof is provided with a fuel magazine in the upper portion and with a gas generating chamber in the lower portion thereof, the producer being provided with longitudinally chambered walls constituting, respectively, a plurality of steam generating and a plurality of gas conveying passages, with the gas conveying passages being disposed about the steam generating passages, regulable means for introducing water at a selective point in certain of the steam generating passages, means for introducing the generated steam in minute jets into the interior of the gas generating chamber at a point beneath said chamber, and a gas receiving chamber in the lower part of the producer beneath the gas generating chamber and the steam generating passages and communicating with the final gas passage.

1,677,304. GAS PURIFICATION PROCESS. FREDERICK W. SPERR, Jr., Pittsburgh, Pa., assignor to The Koppers Company, a Corporation of Pennsylvania. Filed Dec. 31, 1926. Serial No. 158,424. 8 Claims. (Cl. 23—3.)

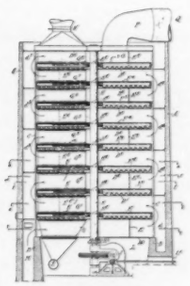
1. The process of regenerating a liquid previously used for purifying gas from acidic impurities which comprises subjecting it to the action of air in the presence of hemicellulose.

1,676,736. COKE OVEN. THOMAS G. KUS, Chicago, Ill., assignor, by mesne assignments, to Chicago Trust Company, trustee, Chicago, Ill., a Corporation. Filed July 16, 1923. Serial No. 651,693. 11 Claims. (Cl. 202—9.)



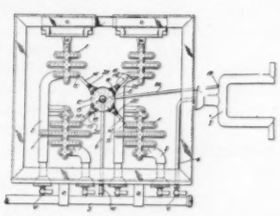
1. A series of horizontally elongated coking chambers arranged side by side, the intermediate walls thereof being common to two contiguous chambers respectively, each heating wall having heating chambers on opposite sides of the central plane thereof, ignition chambers at the top and bottom respectively of the heating chambers, ports for conveying air to and waste gases from the lower ignition chambers, vertical passages intermediate the heating chambers and communicating with the lower ends thereof for supplying them with fuel gases, mains supplying the upper ends of said passages with fuel gases, other vertical passages extending between the heating chambers and opening thereinto intermediate their height, mains for supplying gas to the last named passages, ports communicating with the upper ignition chambers for supplying air thereto and permitting the escape of waste gases therefrom and vertical flues intermediate the heating chambers and communicating with the last named ports on opposite sides of the wall.

1,680,274. DRYING APPARATUS. FRANK L. ALLEN, Montclair, N. J., and ARTHUR D. FLOWER, Wilmington, Del., assignors to Edge Moor Iron Company, Edge Moor, Del. Filed Mar. 7, 1927, Serial No. 173,373, and in Cuba Mar. 2, 1926. 6 Claims. (Cl. 34—23.)



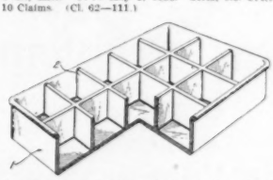
1. Drying apparatus comprising a series of cylindrical drying chambers arranged one above the other and separated by spaces interconnected to form a flue for heating gases, long and radially arranged delivery conduits connecting the drying chambers, means for sweeping the material to be dried over the floor of each chamber, a heating gas flue comprising as a part thereof the spaces separating the drying chambers and vent openings for steam and gas leading from the drying chambers into the heating flue.

1,675,899. AUTOMATIC IGNITER FOR GAS STOVES AND THE LIKE. CARL E. METHUDY, St. Louis, Mo., assignor, by mesne assignments, to Alvin D. Goldman, St. Louis, Mo. Filed July 21, 1927. Serial No. 207,391. 9 Claims. (Cl. 158—115.)



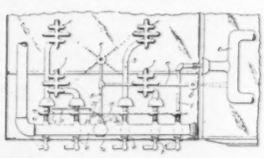
7. An automatic igniter for a gas burner having gas jet-forming openings through one wall, and having a gas outlet through another wall at an angle to said openings, comprising a casing for confining a body of combustible gas, a pilot light burner in said casing, and means for conducting gas from said outlet to said casing for ignition by said pilot light burner and for discharging the pressure of combustion and the combustion flame in a plane parallel with the wall of said first named burner having jet-forming openings.

1,675,599. SHARP-FREEZING CONTAINER FOR MECHANICAL REFRIGERATORS. LLOYD G. COFFMAN, Flint, Mich. Filed May 3, 1928. Serial No. 274,717. 10 Claims. (Cl. 62—111.)



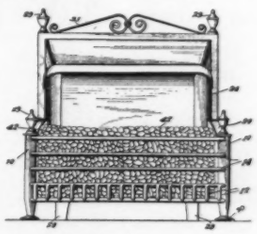
1. As a new article of manufacture, a sharp freezing container of the type adapted to be positioned in heat conducting relation with the low side of a mechanical refrigerating system and formed of material not reddily wettable by water, part of the container being of non-metallic flexible material to permit easy removal of the frozen article or articles.

1,673,859. IGNITION DEVICE FOR GAS BURNERS. CARL E. METHUDY, St. Louis, Mo., assignor, by mesne assignments, to Alvin D. Goldman, St. Louis, Mo. Filed July 23, 1927. Serial No. 207,882. 14 Claims. (Cl. 158—115.)



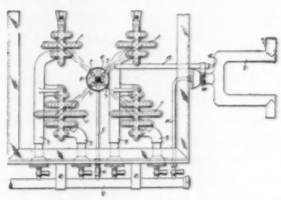
14. An ignition device for gas burners comprising a gas manifold, valves controlling passage of gas from said manifold to said burners, respectively, a flashing pilot light for igniting gas issuing from said burners, a valve controlling passage of gas from said manifold to said pilot light, a longitudinally movable actuator, means in connection with said first-named valves for supporting and guiding said actuator in its longitudinal movements, means under control of said actuator leaving said pilot light valve in position to permit a relatively small amount of gas to pass to said pilot light and operating said pilot light valve to admit an additional amount of gas to said pilot light to cause said pilot light to flash to ignite gas issuing from said burners, means operated by said first-named valves for moving said actuator to cause said pilot light valve to permit gas to pass to said pilot light to flash as aforesaid, and means for restoring said actuator to its initial starting position.

1,680,513. FIREPLACE. GEORGE W. GUY, Chicago, Ill. Filed Jan. 9, 1925. Serial No. 1,435. 6 Claims. (Cl. 219—45.)



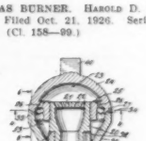
1. A fire place unit comprising an illuminated imitation grate, a source of radiant heat above said grate, a continuously curved reflector below said source set to reflect radiant heat out over the top of said grate, a reflecting hood above said source, said hood comprising a first portion adjacent the source set to reflect directly out over said grate and a second potion remote from said source set to reflect back onto the reflector below said source, and a second hood spaced over said first hood to define an air passage.

1,675,900. OVEN LIGHTER FOR GAS STOVES. CARL E. METHUDY, St. Louis, Mo., assignor, by mesne assignments, to Alvin D. Goldman, St. Louis, Mo. Filed Aug. 20, 1927. Serial No. 214,233. 6 Claims. (Cl. 158—115.)



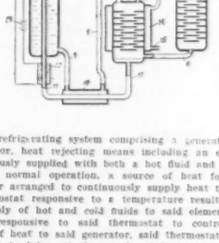
2. A device of the character described comprising a pilot light adapted to flash a flame outwardly therefrom, a burner spaced from the pilot light and provided with a gas outlet, and a tube supported between the burner and the pilot light and having an open end below the plane of the flame issuing from the pilot light and an open end arranged to receive and conduct gas issuing from the burner toward the pilot light.

1,667,133. GAS BURNER. HAROLD D. SCHRADER, Denver, Colo. Filed Oct. 21, 1926. Serial No. 143,093. 10 Claims. (Cl. 158—99.)



1. A gas burner having a hollow hub member whose outer end is closed by a perforated partition, a hollow tip secured to the outer end of said hub and cooperating with the partition to form an expansion chamber, a frusto-conical member secured to said hub portion and cooperating with the hub and with the tip member to form a second expansion chamber, the first mentioned chamber being connected with the interior of the hub and with the second expansion chamber by means of a plurality of openings, the walls of the second chamber having a plurality of openings connecting the second chamber with the atmosphere.

1,675,474. REFRIGERATOR OF THE ABSORPTION TYPE. BALTZAR CARL VON PLATEN and CARL GEORG MUNTERS, Stockholm, Sweden, assignors, by mesne assignments, to Electrolux Servel Corporation, a Corporation of Delaware. Filed Oct. 2, 1925, Serial No. 60,088, and in Sweden Sept. 15, 1925. 3 Claims. (Cl. 62—119.)



1. A refrigerating system comprising a generator, an evaporator, heat rejecting means including an element continuously supplied with both a hot fluid and a cold fluid in normal operation, a source of heat for said generator arranged to continuously supply heat thereto, a thermostat responsive to a temperature resultant of the supply of hot and cold fluids to said element and means responsive to said thermostat to control the supply of heat to said generator, said thermostat being operative to interrupt the supply of heat to the generator upon an increase of temperature to a high value due to cessation of supply of cold fluid to said element and being inactive during normal operation.

With *the* Metermen

Metermen *in* Interesting Session *at* Anaheim

OPENING with a description of the gas fire at Santa Fe Springs, given by Jack Delaney of the Union Oil Company, the Southern California Meter Association's September 27 session got off to a good start, 71 registrations being turned in for the evening dinner at the Elks Club house, Anaheim, California.

Mr. Delaney told interestingly of experiences being met in the Getty No. 17 fire on Telegraph Road east of Butler Road. The well ignited at 4:30 P. M., Sunday, September 16. A dozen or more rigs were immediately wrecked as a safety measure, and a 250-foot tunnel was later begun in an attempt to secure a shut off. Mr. Delaney wound up his description with a word of council to unskilled duck-hunters, who, he said, could pick up any number of their favorite fowl—pre-roasted—by frequenting the locale of the inflamed gasser.

Sessions of the Pacific Coast Gas Association at Coronado were reviewed by several of the Meter Association members who attended them.

Announcements relating to Association business were made by President B. M. Laulhere. They included the resignation of K. B. Miller as chairman of the entertainment committee; the statement that new memberships will henceforth be effective for one year from the date of joining; and a preliminary intimation that plans are under way for another Hi-Jinks and for a renewal of the Association's monthly golf tournaments. Sixteen new members were voted into the Association at this month's meeting.

Papers presented at the September 27 meeting were two in number. J. Wiley of Westcott & Greis, Inc., spoke on "The Application of Meters to Field and Plant Problems," accompanying his paper with a demonstration of a Westcott orifice meter to show the assembly of the pressure element. Indicating flow meters were also on display. Al Decker, also with Westcott & Geis, Inc., assisted Mr. Wiley in the demonstration of equipment, and a lively general discussion followed presentation of the paper.

E. Lorenz of the Southern California Gas Company dealt interestingly with the topic "Liquids and Solids in Gas Lines, and Methods of Removal." Several slides prepared in advance to illustrate the paper were shown, as well as a number of impromptu slides illustrating contributions to the general discussion on dust traps and devices for liquid removal.

E. H. Pann, chairman of the Association's program committee, made announcement of two papers due for the next business session. E. Schultz of the Richfield Oil Company will handle the subject, "Effect of Bushings on Meter Accuracy;" and Colonel Sidney Binckley will describe the new type orifice meter designed by himself.

The Application *of* Meters *to* Field *and* Plant Problems

By J. O. WILEY
*Wescott and Greis**

IT IS difficult to enumerate briefly all of the technical questions that arise in connection with the various classes of measurement problems; therefore, it appears advisable at this time to merely touch upon the practical side of the different situations.

It is not the intention of this paper to discuss any of the mathematical formulae or the application of correction factors due to the variation of any of the elements that enter into metering problems. So with this thought in mind, three classifications are arrived at: namely,

1. Field Measurment
2. Laboratory Measurement
3. Refinery and Plant Measurement.

The sub-title "Field Measurement" is meant to include the measurement of gas at any point remote from a plant and should include the meters of gasoline, oil or gas companies.

The orifice meter has become very popular for field use because of its simplicity of construction and operation, its comparatively low cost of maintenance, and ease of adjustment. Its general use in the field is to measure gas from a certain source of supply into a plant, or from a plant to the mains of the public utility. In recent years, however, new applications of this type of meter have arisen. It is extensively used in recirculation or gas-lift work, measuring gas to oil-field boiler installations and gas engines and it is also installed on pipe lines that deliver gas to underground storage systems. It is widely used by the gas companies to measure gas to large industrial consumers.

In considering the orifice meter for use in a prospective measuring station it should be borne in mind that it has its limitations. For example—if a large volume of gas is to be measured and the ratio of the maximum hourly load to the minimum hourly load is as high as 10:1 or 15:1 the ordinary single meter set-up will not handle these loads with accuracy. For efficient and accurate results a double set-up of a 10-inch and 100-inch differential range meter will be extremely advantageous.

It is the policy of many of the larger oil companies today to account for all the gas used in the field, particularly the gas used by boilers and pumping engines. In a great many cases the volume consumed is relatively low, perhaps only a few thousand cubic feet per hour. Such cases may not warrant the expense of an orifice meter and measurement can be accomplished by the installation of a positive type iron case meter, which may be read at periodic intervals. It must be remembered, however, that the gas in the field is often under considerable pressure and when such a meter is used, a regulator must be employed to reduce the gas to the proper pressure demanded by the burners or gas engines. A convenient installation consists of an ordinary 1-inch or 2-inch Reliance house-type regulator, depending on the size of the meter connections, set ahead of the meter, allowing the gas to expand into a small reservoir or container such as an ordinary 30-gallon domestic boiler or a few feet of 10-inch pipe. This eliminates pulsation and insures better operation of the meter, regulator and the working unit, be it a boiler or gas engine.

The positive meter, while very rugged and accurate, must be removed from service periodically and brought to the shop to be tested for accuracy on a meter prover. In case adjustments or replacements of parts are necessary, such work should be done only by an expert.

LABORATORY MEASUREMENT

This classification intrudes slightly on field operations and is included only to suggest a type of meter to be used in connection with the charcoal test for the gasoline content of natural gas. Any small, compact and accurate type of low capacity meter may be used for this work. The most popular kind in use at the present time is a small cylindrical meter with which most laboratory men are familiar, namely the two-light three-diaphragm test meter. The common causes of error in this meter are due to overloading, exerting too much pressure on the diaphragms, or allowing mercury to be drawn into the meter from a manometer. Inasmuch as the pressure drop due to gas passing through the meter is very small, about ½ inch of water, it is not advisable to allow a pressure much above 8 ounces to build up on the inlet of the meter. It is true that the meter can stand as high as 2 pounds pressure, but this is a severe strain upon the diaphragms and should be avoided if possible. It is advisable to test this type of meter on the approved type of prover periodically, and adjust the internal working parts if inaccuracies are noted. Here again it is well to have an expert conduct these tests and adjustments.

GASOLINE PLANT AND REFINERY MEASUREMENT

In recent years the advisability of having permanent records of measurement has brought about the extensive use of orifice meters in the plant. It has proved to be of great assistance in obtaining the overall efficiency of the plant and also of the individual units.

The master intake meter can be used as a check against the total gas delivered through the field meters on the various wells or leases. It supplies a means of checking leakage losses on the gathering lines and is also a check on pressure conditions in the field. The outlet or discharge meter of the plant shows the depreciation of the gas due

(Continued on Page 48)

* Presented before the Southern California Meter Association, at Anaheim, Calif., September 27, 1928.

Means *for* Removal *of* Liquid *and* Solid Impurities *in* Natural Gas

By E. Lorenz
*Southern California Gas Company**

ONE of the most common problems in gas measurement is the result of liquid or solid impurities contained in the gas. Liquids accumulating in a pipeline frequently produce pulsations of sufficient magnitude in the flow to impair the accuracy of measurement. These liquids may be close to the orifice meter or be trapped a considerable distance away.

One recent case we found the line trapped about 8 miles from the meter and the orifice gauge was showing a 2-inch pulsation, at about 10 inches differential. This pulsation increases as the velocity increases, and at times is very serious—not only as to the effect on measurement, but it greatly reduces the capacity of the line (and on extreme cases would stop the flow entirely).

Water vapor and water particles are the most common forms of foreign elements in natural gas Most natural gas wells sooner or later during their life produce water. This water may be fresh or salt, often contain mineral salts, and is sometimes very corrosive. If this liquid is allowed to flow in the lines it will cause considerable trouble later when it reaches the distribution lines and meters.

Sand or shale particles either dry or in the presence of free water vapors, will cause an abrasive action much like a sand blast, wearing away the interior surface of pipe and fittings. In some cases where the direction of flow changes it will cause the wearing through of fittings causing bad leaks; also when this sand or dirt is deposited on the face of the orifice disc or on the inside of the orifice tubes it causes a serious error in gas measurement. In some cases it is necessary to clean discs at least once a day to assure good measurement.

There is another cause which sometimes makes us trouble and that is the overflow of absorption towers which allows the absorption oil to be carried over with the gas through the transmission lines into the distribution system. There are a great number of ways to eliminate this liquid and solid matter from the lines. See Sketch No. 1.

The simplest form of drip for removing liquid from a pipeline is to tap the line at some low point allowing the liquid to drain out into the trap and removing same by blowing the drip. The blowing of the drip depends on the line in which it is installed. See Sketch No. 2.

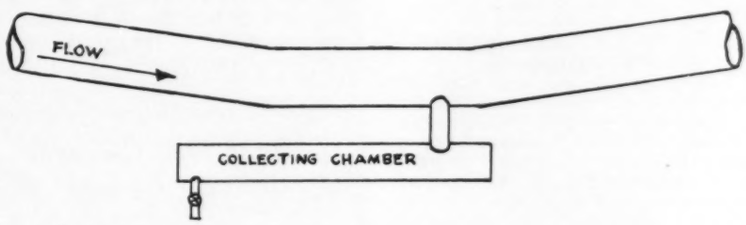
This drip is commonly used in pipelines where the height of the drip is limited by local conditions. This is a form where the direction of flow is changed. By having the two legs or collecting chambers, any liquid carried over in the first leg will be caught by the second leg. This drip can be made out of any size pipe.

Sketch No. 3 is a form which combines both the decrease in velocity of flow and change in direction with impact, and is convenient to install. It can be constructed for high pressures at a minimum of cost. It is very efficient and has been adopted by the larger gas companies in the East and is used quite frequently in our own territory.

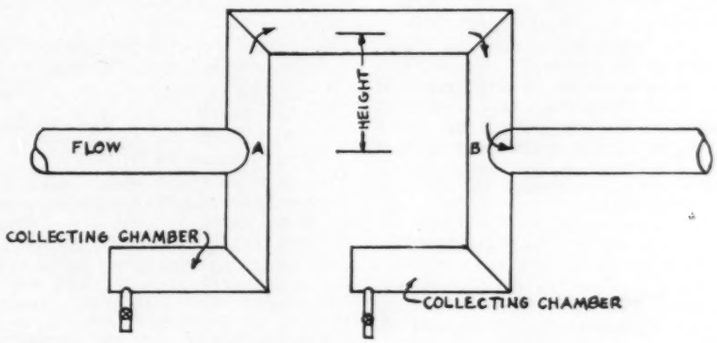
Sketch No. 4: This drip or trap is one we use on our 12-inch Santa Monica line and has proven very efficient in collecting dirt and fine dust, which is a condition existing in most distribution systems. The inside core is a wire basket filled with oiled horse hair. This basket can be removed without shutting down the line by removing the end plate and pulling it out. Then the hair is all pulled out and new hair installed. The dirty hair is removed to our plant, washed with gasoline and re-oiled with a light oil and used over again. This trap is cleaned once a week and quite a lot of dust and dirt is caught, keeping it out of the distribution system and out of meters and regulators and cutting down complaints almost 100 per cent.

This paper only covers a few of the many different styles of traps. There are any number that are considered just as good as the ones I have mentioned, but most all of them involve some of the same principles that I have shown.

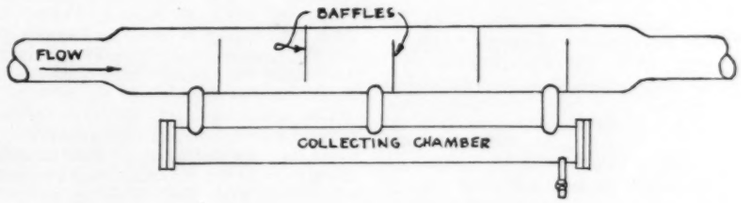
SKETCH No. 1



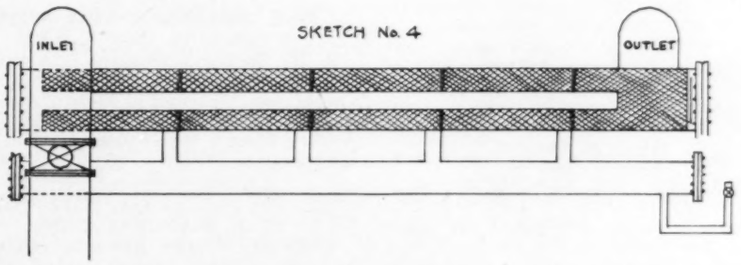
SKETCH No. 2



SKETCH No. 3



SKETCH No. 4



* Presented before the Southern California Meter Association, September 27, 1928, at Anaheim, Calif.

ST. JOSEPH GAS COMPANY BOUGHT BY DOHERTY

Announcement has been made of the purchase by the Henry L. Doherty interests of the St. Joseph, Missouri, Gas Company, from the American Light and Traction Company, former owners. While the amount of money involved in the transaction was not announced, press reports credit it with being in the neighborhood of $2,500,000.

Included in the purchase are $1,500,000 in common stock, $1,000,000 in bonds and the physical properties including office building, manufacturing plant, gas mains and a gas holder with a capacity of 3,000,000 cubic feet.

Application has been made before the Missouri State public service commission by the Cities Service Gas Company, a Doherty holding, for permission to lay a natural gas pipeline from Leavenworth, Kansas to St. Joseph. The legal holding company of the new property is the Gas Service Company.

COMMUNITY NATURAL SERVING ADDITIONAL TOWNS

The Community Natural Gas Company, of Dallas, Texas, has recently piped the following Texas cities for gas: Newark, Saginaw, Palmer, Milford, Belmeade, Rogers, Buckholtz, Cameron, Rockdale, Holland, Bartlett, Granger, Taylor, Georgetown, Hutto, Roundrock, and Little River.

Marysville, Oklahoma, has secured its quota of gas users and will soon be listed among the towns being supplied gas by the Community Natural. A crew also recently started the piping of Ryan, Oklahoma.

L. A. EMPLOYEES OF STANDARD GASOLINE CO., HOLD PICNIC

Los Angeles office employees of the Southern Division of the Standard Gasoline Company, on September 8th held a picnic at Brookside Park, Pasadena. One feature of the Picnic was the presentation by Safety Engineer B. F. Masten to the winning team in a first aid contest, a cup constituting a perpetual trophy to be contested for in future company safety events.

F. E. REED, OF B. C. GAS DEPT., RETURNS FROM VACATION

F. E. Reed, secretary of the gas department, British Columbia Electric Railway Company at Vancouver, B. C., returned recently from a very enjoyable vacation spent in his private launch cruising along the Northern British Columbia coastline. He was accompanied by W. Soresby, A. Milne and W. Smith, all of the B. C. Electric Gas department.

COURSE IN GAS SALESMANSHIP POPULAR WITH INDUSTRY

A number of Southern Counties Gas Company executives and sales representatives are enrolling for the A. G. A. course in "Domestic Gas Salesmanship," which will become available October 15. The course covers a six-month period, including special subjects on sales methods, consumers' needs, building the gas load, etc.

SOUTHERN CALIF. GAS CO. ASKS PERMIT TO SERVE ELSINORE

Southern California Gas Company has applied to the California Railroad Commission for permission to exercise a franchise to distribute natural gas in Elsinore, California. The franchise is now pending before the city trustees of that city.

CHARLES J. REILLEY NOW WITH PUBLIC SERVICE CO. OF COLO.

Charles J. Reilley has joined the house heating department of the Public Service Company of Colorado, with headquarters at Denver.

Placing Final Touches *on* Texas-Kansas Enterprise

WORK on the construction of the 20-inch natural gas pipeline between Wichita and Ottawa, Kansas, of the Cities Service Gas Company is now completed.

Cities Service Gas Company, according to late announcement, will construct an additional 16-inch natural gas main line from Ottawa, Kansas, to Kansas City, Missouri, giving the company a direct pipeline 425 miles in length from its gas reserves in the Texas Panhandle to Kansas City.

This line will be 38.5 miles in length and will parallel the two 16-inch lines which now connect the Kansas Cities with the Cities Service main junction at Ottawa. The new project will connect with Glaven station, southwest of Kansas City, and from there on a 20-inch line will be laid to the regulating station for the city at Seventy-first street and Porter Road. This 20-inch line will be five miles long.

1928-1929 Calendar

American Gas Association—Atlantic city, October 8 to 12.

International Petroleum Exposition—Tulsa, Okla., October 20-29.

Southern California Meter Association—October 26.

Second International Conference on Bituminous Coal—Pittsburgh, November 19-24.

Rocky Mountain Oil and Gas Association—Great Falls, November 23.

American Society for Steel Treating—Los Angeles, January 14-28, 1929.

Western Metals Congress—Los Angeles, January 14-28, 1929.

Western States Metal and Machinery Exposition—Los Angeles, January 14-28, 1929.

Oklahoma Utilities Association—Oklahoma City, March 12, 13, 14, 1929.

Construction of the two new compressor stations at Corwin, Kansas, and Higgins, Texas, is being speeded, and both these new units are expected to be ready for preliminary operation about December 1. With the completion of these two stations and additions to those at Pampa, Texas, Mooreland, Oklahoma; Wichita and Ottawa, Kansas, the compressing power along the 20-inch line from the Texas Panhandle will total 27,000 horsepower.

The telephone and telegraph department of the Empire Companies, Bartlesville, Oklahoma, is constructing a 30-mile private telephone line to the Cities Service gas compressor station near Corwin as an extension to the circuit built from Ponca City, Oklahoma, to Pampa, Texas, last year.

R. H. BRADFORD NOW WITH CENTRAL ARIZ. L. & P.

R. H. Bradford, formerly sales manager for the Worthington Pump & Machinery Corporation, traveling in Mexico and southwestern United States, is with the Central Arizona Light & Power company as assistant sales engineer.

LITTLETON, COLO., WILL VOTE ON NATURAL GAS

Littleton, Colorado, will soon vote on the proposal to bring natural gas to that city from the pipeline nine miles east.

TRI-TEX UTILITIES COMPLETES GAS LINE SURVEY

A gas line survey extending over five counties in southwest Texas, was recently completed by the Tri-Tex Utilities. The counties include Maverick, Zavala, Dimmit, LaSalle and Frio, and the 200-mile gas line which will be constructed will supply gas to Eagle Pass, Batesville, La Prior, Crystal City, Carrizo Springs, Asherton, Catarina, Cotula, Dilly, Derby and Pearsall.

The Tri-Tex Company has recently completed a line 12 miles long extending from the gas field located in the northern part of Zavala County to Uvalde City. The new line will run south from the gas field through Zavala and Dimmit County, east to LaSalle County and north to Frio County. Connecting lines will be run to the principal towns along the route from the main line, which will be 160 miles in length and which will be constructed of 8-inch pipe.

TEXAS CITIES GAS CO., APPLIES FOR RATE HEARING

The Texas Cities Gas Company, which supplies gas to Galveston, Texas, has applied for a rate hearing before the railroad commission of Texas, asking that a rate be fixed for gas service in Galveston which will provide a fair return. The present rate in effect is $1.45 per thousand cubic feet.

An ordinance has been passed in the city of Galveston making it mandatory for the gas company to serve gas at 75c per thousand for the first 3,000 cubic feet. Present rates will remain in effect, according to the Texas Cities Company, until they are adjusted before the railway commission.

LONE STAR GASSERS WIN

The Lone Star Gassers, baseball team of the Lone Star Gas Company of Dallas, recently won the state amateur championship title in a three game series played with the Light and Power company team of Houston, Texas. The lone Star team were champions of North Texas, and the Houston team champions of South Texas. Games were played in the Steer Stadium at Dallas. Following the play-off, the Lone Star team were honor guests at a banquet given them by the officials of their company.

PAYNE FURNACE & SUPPLY CO. WILL EXHIBIT AT A. G. A. MEET

Elroy Payne, general manager of the Payne Furnace and Supply Company of Beverly Hills, California, has completed arrangements to have on exhibition at the Atlantic City Convention of the American Gas Association several of his firm's new type unit furnaces in colors. The display will be in charge of R. W. Campbell, heating engineer for the Payne Company.

ARIZONA EDISON REPORTS SUCCESSFUL CAMPAIGN

The Arizona Edison Company of Globe reports a successful campaign for the sale of gas ranges under the direction of J. F. Hartin, new business manager, as well as a cooking school conducted by Mrs. Emma Stanton. During September they made a flat charge of $5 for a connection from main to stove. Employees were given a bonus for prospects during the campaign.

P. E. DRACHMAN MAKES VISIT TO ARIZONA

P. E. Drachman, formerly in utility merchandising work in Tucson and Prescott, and now commercial manager of the Peoples Light & Power Corporation, New York, made a visit to Arizona during September, which is on his itinerary to properties operating in 17 states.

SALT LAKE CITY TO HAVE GAS FROM WYOMING FIELDS

COMMISSIONERS of Salt Lake City, Utah, have granted a franchise to the Ohio Oil Company and allied interests to operate a natural gas service in that municipality for a period of 50 years. The franchise holders were represented by John McFayden and L. B. Denning. The ordinance passed by the city commission provides that the franchise holders shall deliver gas to the city at a gateway price of 40 cents per 1000 cubic feet. The company agrees that it will not seek higher rates during a 10-year period than those stipulated in a rate schedule made a part of the ordinance. To users of 5000 cubic feet of gas it is agreed that the rate shall not be more than 50 cents per 1000 cubic feet. This rate will be available to practically all consumers for heating. The pipe line company will deliver gas to the city gate to distributing interests. The city agreed to an occupation tax of one per cent of the earnings of the company, the minimum tax to be paid into the city treasury being $5,000 per year.

An application for a certificate of convenience and necessity has been filed by Mr. McFayden and Mr. Denning.

Construction of the $2,000,000 line from Baxter Basin, Wyo., fields to Ealt Lake City will start immediately, it was announced by Mr. Denning upon his return from a conference in the east, at which he was placed in charge of operations for the Wyoming-Utah project. The line has been surveyed and work will be rushed as rapidly as possible before the heavy snow storms of the Rocky Mountain area tie up progress for the winter. At some points the pipe must be laid a distance of 70 miles from the nearest railroad. The line will be 200 miles in length.

Three additional franchises have been granted the Ohio Oil Company and other interests involved, in Manila, Green River and Evanston; Price, Provo, Vernal, and others are expected to follow suit.

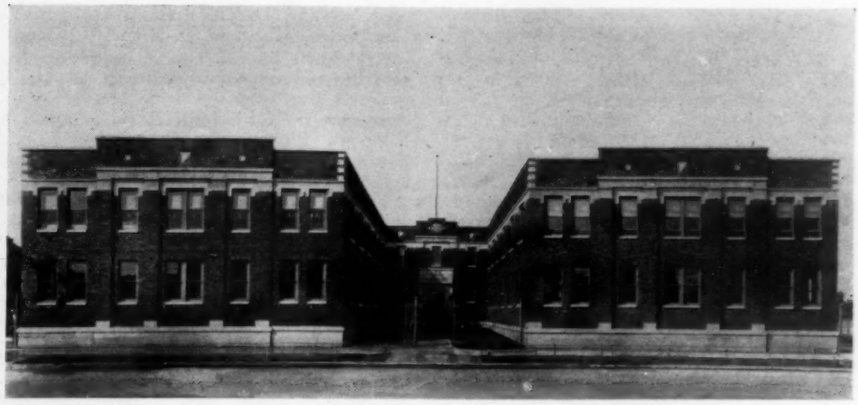
SO. COUNTIES LETS CONTRACT FOR NATURAL GAS LINE

Southern Counties Gas Company has let the contract for construction of a natural gas transmission line 8⅝ inches in diameter, to extend from the present terminus of its system near Gaviota, Santa Barbara County, Calif., to Santa Maria, for the purpose of supplying gas from the Ventura Avenue field to the Santa Maria Gas Company at Santa Maria. The line will be 29½ miles long and will cost about $234,000. Southern Counties will own the line as far as Gaviota, and the Santa Maria Gas Company will own the stretch from Gaviota to Santa Maria.

Orcutt, Lompoc, Pismo Beach, Atascadero, Paso Robles, San Luis Obispo and Santa Maria are among the towns which will be served with natural gas as a result of the construction of this line.

COAST COUNTIES G. & E. ISSUES INTERESTING FOLDER

An interesting folder recently printed by the Coast Counties Gas & Electric Company, San Francisco, and distributed with the September gas bills, features "Gas—a Luxury in Grandfather's Time." Pithy facts about the "universal convenience" and the history of this Company, which established one of California's first gas plants at Santa Cruz more than 60 years ago, are given. Figures are introduced showing that on the Pacific Coast alone, consumption of gas has increased 61 per cent, while the increase in revenue is 32 per cent. It is also pointed out that the rapid development of the Pacific Coast is reflected by its relatively greater increase in the use of gas as compared with the country as a whole.



The newly completed A. G. A. Laboratory, Cleveland, Ohio

Testing Laboratory *of* A.G.A. Officially Dedicated

THE new Testing Laboratory of the American Gas Association was officially dedicated at Cleveland, Ohio on September 13. Oscar H. Fogg, president of the association, unveiled a tablet with the inscription "This building is dedicated to promote and develop the gas industry to the end that it may serve to the fullest possible extent the best interests of the public."

J. G. Clark, engineer of research and training, The London Gas Light and Coke Co., London, England; R. W. Gallagher, president of the East Ohio Gas Co., Cleveland, Ohio; and Carl Shuler, director of law for the city of Cleveland, were the speakers at a special luncheon of more than 100 gas executives and officials held immediately after the unveiling ceremonies.

In addressing the luncheon gathering Mr. Gallagher commended the Laboratory staff, headed by R. M. Conner, director, upon the fact that they had made possible this efficient laboratory by their effective work with the limited facilities hitherto available.

The new building is a two-story brick structure and provides approximately 3,200 square feet of office space, 8,700 square feet of storage space and 14,700 square feet for appliance testing and research. Three large fully equipped rooms are provided for the manufacturers. About two miles of pipe are installed in the building to provide gas, water and air to the various rooms

SHORT COURSE OFFERED *by* MID-WEST GAS ASSN.

FOR THE eighth time the Iowa State College and the Mid-West Gas Association will offer a short course in meter repairing and general gas distribution and production, according to preliminary word from Robt. L. Klar, chairman of the short course committee. The course this year runs from December 4th to 7th, inclusive, and will include, in addition to lectures, demonstrations and shop practice on meter repairing, and the reading of papers on the following general topics in gas production and distribution:

The mechanics of house governors.

Condensers.

House heating investments. (This will cover the subject from the standpoint of what it costs us to take on peak loads of this nature.)

The effect of bad purification on the distribution system.

Butane and its relative value to gas oil.

Blow run and its most economical percentage.

Pipe corrosion and protective coatings.

Ground temperatures existing around gas mains and how they vary from season to season.

The metering of industrial gas and the cost of laying mains. This last subject is from the standpoint of whether or not power machinery is an advantage and under what conditions and limitations

WAREHOUSE FOR CENTRAL ARIZ. L. & P. IN PROJECT

The Central Arizona Light & Power Company has announced the construction of a warehouse to cost $90,000 to be located at the corner of South Third Avenue and Buchanan Street, Phoenix, Arizona.

NATURAL GAS DUE FOR MANY OKLAHOMA TOWNS

Preliminary action has been taken or actual work begun on gas distribution systems in the following Oklahoma towns: Kingfisher, Watonga, Marshall, Thomas, Apache, Fairview, Okeene, Blanchard, Custer City, Canton, Hennessey, Dover, Grandfield, Goodwell and Asher. Several of the foregoing towns are on the 14-inch gas pipe line now being constructed by the Consolidated Gas Utilities Company from the Wheeler County, Texas, gas fields to Enid, Oklahoma. Other towns which have recently taken preliminary steps to secure natural gas include: Snyder, Mountain Park, Atoka, Tishomingo, Hugo, Afton, Roosevelt, Verden and Milburn. Atoka has granted a franchise to the Southern Utilities Company. Custer City has voted a franchise to the Centralwest Gas Company, calling for gas service by October 1. An election at Hugo carried a gas franchise in favor of the Community Natural Gas Company, service being promised some time in November. Citizens of Braggs have voted in favor of a gas franchise to the Braggs Oil & Gas Company.

GEORGE TYLER RESIGNS AS EDITOR OF THE BOOSTER

George L. Tyler, for the past six years associated with the Standard Gasoline Company as editor of "The Booster," company publication, and later employed in the contract department as assistant to C. C. Beem. Mr. Tyler has left the Standard to enter business for himself as a firm member of the Pacific Coast Investment Company, Business Brokers, Los Angeles. He leaves a host of friends behind him in the natural gasoline industry.

R. R. Adams has succeeded to the post of editor of "The Booster."

SOUTHERN COUNTIES SALES FORCE HOLDS PEPPY MEETING

Fifty-seven varieties of "pep,"—and some that Mr. Heinz has not yet put up in jars for popular consumption—were on tap at the fall sales meeting of the Southern Counties Gas Company, at 810 South Flower St., Los Angeles, on September 12. The report of gross sales made at the meeting by Clyde H. Potter, general commercial agent for the company, giving sales figures of the company for the first eight months of this year, show an increase of better than 50 per cent over the same period last year.

Among the speakers at the meeting were F. S. Wade, president of the company, who presented the prizes to the winners of the company's "Hotzone race"; F. H. Bivens, vice-president of the company, in charge of sales and public relations; C. B. Babcock, president of the C. B. Babcock Company, of San Francisco; M. Roper, of the George D. Roper Corporation, of Rockford, Illinois; H. W. Foulds, vice-president of Servel Sales, Inc., of New York; and A. L. Spring, of the Pacific Coast branch of Servel Sales, Inc. Frank C. Packer, of the Welsbach organization, and other gas appliance men were present as guests.

Prize winners in the Southern Counties Gas Company "Hotzone race," who were guests of honor on this occasion, were as follows: Wm. Peacock of Santa Monica, first prize, all expenses on trip to Coronado Gas Convention; Sid Allander of Santa Ana, second prize, wrist watch; S. E. Ledbetter of Santa Monica, third prize, silver loving cup.

BYLLESBY ACCOUNTANTS IN CONFERENCE AT OKLA. CITY

About 100 members of the Byllesby Accountants' Organization met in conference in Oklahoma City, September 24 to 27 inclusive. Meetings were at the Skirvin Hotel. B. F. Braheney, general auditor of the Byllesby Engineering & Management Corporation, was in charge of the sessions, with W. R. Emerson, secretary and treasurer of the Oklahoma Gas & Electric Company, as chairman. Among those in attendance were M. A. Morrison, B. W. Lynch, and W. H. Hodge of Chicago; C. S. Mitchell of the Philadelphia company; J. J. Molyneaux, Northern States Power Company; J. J. McKenna, Louisville Gas & Electric Company; M. B. Fowler, San Diego Consolidated Gas & Electric Company; C. E. Kohlhepp, Wisconsin Public Service Corporation; E. J. Roseneaur, representing the Byllesby organization on the Pacific Coast, and others.

BRITISH COLUMBIA ROCKGAS, LTD., INCORPORATED AT VICTORIA

B. C. Rockgas, Ltd., was incorporated at Victoria, B. C., recently as a Vancouver company. It is capitalized at $10,000, and has its headquarters at 227 Rogers building, Granville street, Vancouver, B. C. The firm has also an agency at West Vancouver, and in various other parts of the lower mainland of British Columbia, where the gas mains have not as yet been laid. The firm had an exhibit at the recent Canadian Pacific Exposition at Vancouver, and demonstrated this type of gas for use in furnaces, ranges, and all domestic purposes for which the more generally manufactured gas is utilized.

TEST WELL FOR GAS BEING DRILLED NEAR AUBURN, WASH.

Drilling started late in September on a test well for gas by the Flaming Geyser Gas Company of Tacoma, Washington. The site of the drilling is 11 miles east of Auburn. O. J. Stone is president of the company.

ARKANSAS NATURAL WILL LAY CLARKSVILLE-LITTLE ROCK LINE

Arkansas Natural Gas Corporation has awarded the contract to construct its 95-mile gas pipe line from the fields at Clarksville, Arkansas, to North Little Rock, to Booth & Flinn of Pittsburgh. The line will cost approximately $1,250,000, and the gathering system in Clarksville together with the distribution systems in the towns that will be supplied gas, will cost an additional $500,000.

The line will be of 10-inch seamless pipe and will have a capacity of 20,000,000 cubic feet per day. Gas will be delivered to the city gate at North Little Rock. At Little Rock the line will connect with the main line of the company from the Northwest Louisiana and East Texas fields. It is expected that the line will be completed by December 15th.

The Arkansas Natural has completed wells on its leases in the Clarksville territory, which have a total open flow capacity of 70,000,000 cubic feet per day, and is now drilling five other wells.

MIDWEST GAS CORP. WILL HAVE HEADQUARTERS AT NEODESHA, KAN.

Kansas headquarters of the Midwest Gas Corporation have been established at Neodesha, Kansas.

KANSAS GAS COMPANY SECURES HOPE FRANCHISE

Kansas Pipe Line and Gas Company has secured a gas franchise in Hope, Kansas, according to press report.

ANNOUNCE DISSOLUTION OF KANSAS NATURAL GAS CO.

Incident to the policy of grouping all natural gas activities of the Empire Gas & Fuel Company under one organization, the Cities Service Gas Company, officials of the Empire Companies, with headquarters at Bartlesville, Oklahoma, have announced the dissolution of the Kansas Natural Gas Company. The dissolution of this pioneer natural gas company in the Mid-Continent fields recalls some interesting history in connection with the development of the gas industry in Kansas, Oklahoma and Missouri.

Founded in 1904 by the late T. N. Barnsdall, the old Kansas Natural Gas Company was an important factor in developing the natural gas industry to the position of prominence it now occupies in the middle west, and its formal passing brings tinges of regret to pioneer gas men.

In October, 1916, the Cities Service organization acquired controlling interest in the Kansas Natural and began laying the foundation for the natural gas company now represented by the Cities Service Gas Company. The property was held until May 1, 1922, by the Cities Service organization with headquarters in New York, and at that date was formally transferred to the Empire Gas & Fuel Company.

WALTER REID IN NEW QUARTERS IN DALLAS ATHLETIC CLUB

Walter Reid, natural gas and petroleum consulting engineer, has moved his offices from the Magnolia building in Dallas, Texas, to 1219 Athletic Club Building.

An *All Gas* Apartment House

(Continued from Page 36)

Numerous built-in clothes closets are all cedar lined and have either outside or court windows. There are plug-in phone connections in each bedroom; bath rooms and porch floors are of magnesite; all rooms have hardwood floors; windows and doors are weatherstripped and dustproof; latest type hardware is used throughout; kitchens are compact and well ventilated; a fly-proof garbage can container and paper incinerator is located in back yard convenient to the street.

Two additional apartments are provided above the garages. These have the same

GAS CONSUMPTION AND BILLING—OASIS APARTMENTS

Lewiston, Idaho, as of July 12, 1928

(Eight months, 1927-1928)

Apartment	Month	Cooking Refg. and W. Heating cu. ft.	Heat cu. ft.	Combined cu. ft.	Mean Temp. (Monthly)	Total Consumption cu. ft.	Total Billing
	1927						
A	Nov.	9,000	15,600		54°	24,600	$ 21.95
	Dec.	6,400	13,400		46	19,800	18.35
	1928						
	Jan.	9,200	26,900		28	36,100	30.57
	Feb.	7,500	19,500		34	27,000	23.75
	Mar.	8,500	16,300		38	24,800	22.10
	Apr.	8,200	10,800		51	19,000	17.75
	May	7,100	4,000		65	11,100	11.82
	June	4,700	200		67	4,900	7.17
Total—8 Mos.		60,600	106,700		Av. 48°	167,300	$153.46
	1927						
B	Nov.*	1,800	2,100		54°	3,900	$ 6.37
	Dec.*	500	900		46	1,400	.....
	1928						
	Jan.*	1,300	2,500		28	3,800	.....
	Feb.	8,700	24,500		34	33,200	28.40
	Mar.	7,800	16,400		38	24,200	21.65
	Apr.	7,000	3,800		51	10,800	11.60
	May	8,000	800		65	8,800	10.10
	June	5,100	200		67	5,300	7.47
Total—8 Mos.		40,200	51,200		Av. 48°	91,400	$ 85.59

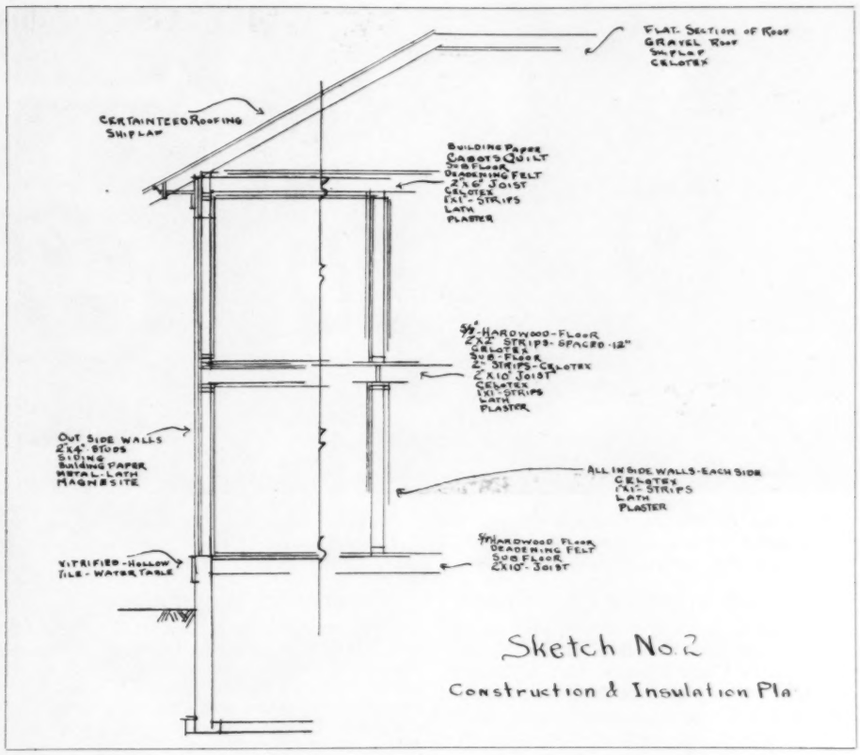
features as the larger ones except for refrigeration and heat. Standard ice boxes are built in and the heating is supplied by fireplaces equipped with radiant type heaters and an especially designed circulating system. The floors are heavily insulated with sawdust in addition to the same type of insulation used in the larger apartment; hence no noise is transmitted from the garages.

INSULATION PROVES WORTH

Sketch No. 2 gives details on how insulation was applied. The plan is unique in that it embodies dead air as well as approved sound, heat and cold resisting materials. For instance, note the upstairs floor construction, strips of celotex two inches wide on each joist, sub floor, sheet celotex two-by-two wood strips spaced 12 inches apart and 5/8-inch hardwood flooring. The ceiling and all walls are doubly insulated with celotex and dead air. A study of Sketch No. 2 will show what pains were taken to make this apartment house the last word in perfect insulation.

The cost of this type of construction is high but it is more than offset by the low heating cost and the absolute comfort of the tenants both in winter and summer. Itemized bills covering the gas consumption for each apartment for a recent eight-month period are submitted as proof of the economy effected by proper insulation.

All bills are computed on the following rate: Minimum charge, $4.00 for 2,000 cubic feet of gas or less, next 2000 cubic feet at $1.25 per thousand, all over 4000 cubic feet at 75 cents per thousand.



Sketch No. 2

Construction & Insulation Pla

	1927						
C	Nov.	9,200	7,600		54°	16,800	$ 16.10
	Dec.	5,900	10,600		46	16,500	15.87
	1928						
	Jan.	9,000	19,200		28	28,200	24.65
	Feb.	8,400	13,100		34	21,500	19.62
	Mar.	8,800	9,500		38	18,300	17.22
	Apr.	8,200	5,200		51	13,400	13.55
	May	5,600	1,000		65	6,600	8.45
	June	5,200	.....		67	5,200	7.40
Total—8 Mos.		60,300	66,200		Av. 48°	126,500	$122.86
	1927						
D	Nov.	10,000	13,900		54°	23,900	$ 21.42
	Dec.	7,700	16,600		46	24,300	21.72
	1928						
	Jan.	10,000	25,300		28	35,300	29.97
	Feb.	10,600	13,100		34	23,700	21.27
	Mar.	10,300	9,700		38	20,000	18.50
	Apr.	10,400	6,100		51	16,500	15.87
	May	9,300	3,200		65	12,500	12.87
	June	7,700	2,300		67	10,000	11.00
Total—8 Mos.		76,000	90,200		Av. 48°	166,200	$152.62
	1927						
E	Nov.			9,400	54	9,400	$ 10.55
	Dec.			8,800	46	8,800	10.10
	1928						
	Jan.			14,400	28	14,400	14.30
	Feb.			12,400	34	12,400	12.80
	Mar.			6,300	38	6,300	6.97
	Apr.			7,700	51	7,700	9.27
	May			4,700	65	4,700	7.02
	June			3,700	67	3,700	6.12
Total—8 Mos.				67,400	Av. 48°	67,400	$ 77.13
	1927						
F	Nov.			7,500	54°	7,500	$ 9.12
	Dec.			6,700	46	6,700	8.52
	1928						
	Jan.			11,300	28	11,300	11.97
	Feb.			9,000	34	9,000	10.25
	Mar.			8,800	38	8,800	10.30
	Apr.			6,000	51	6,000	8.00
	May			3,200	65	3,200	5.50
	June*			.....	67	.....	.....
Total—8 Mos.				52,500	Av. 48°	52,500	$ 63.66
6 Apts. 8 mo.		237,100	314,300	119,900	Av. 48	671,300	$655.32

* Vacant.

VITEX GAS VENT AND FLUE PIPE IS NEW PRODUCT

The Plant Rubber and Asbestos Works, whose plant is located at 537 Brenan street, San Francisco, is offering a new article of manufacture in the Vitex Gas Vent and Flue Pipe for use in lieu of galvanized iron or copper pipe. The purpose of the ingredients used in combination with asbestos is to render the flue impervious to the action of acids and moisture. Their insulating qualities, according to the manufacturers, reduce the volume of condensate and maintain the flow of escaping burnt gases by insulating against any large drop in temperature. The company had an exhibit of its products at the recent Coronado convention of the Pacific Coast Gas Association.

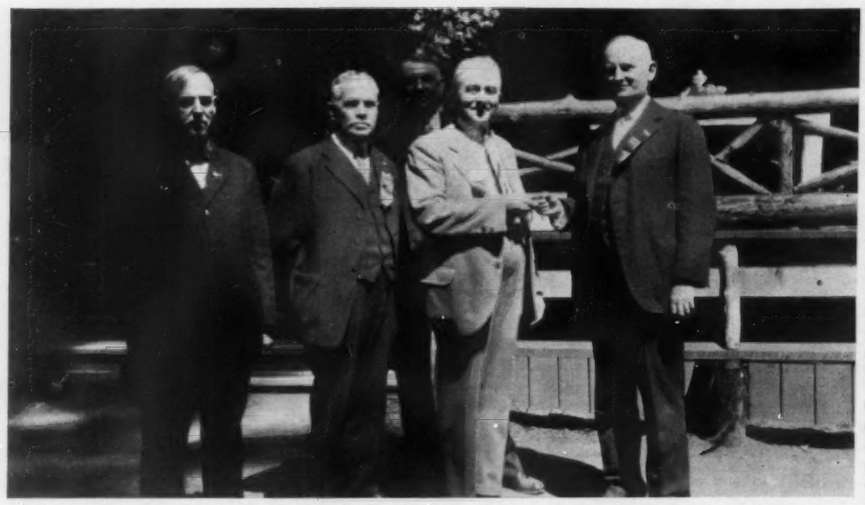
PURCHASE OF COAST COUNTIES G. & C. CO. ANNOUNCED

Purchase by the A. E. Fitkin Company of the controlling interest in the Coast Counties Gas and Electric Company, with headquarters in San Francisco, has been announced by D. A. Pepp, vice-president of the Fitkin company and manager of its Los Angeles office. In taking over the Coast Counties Company, which serves more than 50 communities in the northern part of the state, the Fitkin company purchased the common and outstanding second preferred stock of the northern company.

WARD HEATER CO. WINS GOLD MEDAL OF MERIT

Award of the gold medal of merit to the Ward Heater Company, Los Angeles, by the Awards Committee of the Long Beach Pacific Southwest Exposition was officially announced at the close of the Exposition on Labor Day to E. E. Sproat, president, and N. A. Wright, general manager of the company.

According to the citation which accompanied the award, the medal was bestowed upon the Ward company "As a mark of progress shown in perfection of gas floor furnaces."



President S. Waldo Coleman of the Coast Counties Gas and Electric Company, presenting 15-year pin to "Bob" Cardiff. Others in the picture who received service pins are, left to right: George Dunn, Oscar Ewald, Arthur Gourdier.

EMPLOYEES OF COAST COUNTIES CO. RECEIVE SERVICE PINS

Presentation of the new service pins was a feature of the 17th annual picnic of the employees of the Coast Counties Gas & Electric Company, which was held Saturday, August 25th, at Big Trees near Santa Cruz, California. Among the many emblems distributed by President S. Waldo Coleman was a 35-year pin, given to R. L. Cardiff, former manager of the company, for 37 years of continuous service. George Dunn, Arthur Gourdier and Oscar Ewald each received a 30-year pin.

These service pins are made of solid gold, bearing on the face the following designations: "Fifteen Years Service," with three stars; "Twenty Years Service," with four stars; "Twenty-five years Service," with one diamond; "Thirty Years Service," with two diamonds; and "Thirty-five Years Service" with three diamonds.

After the ceremony, which recognized the faithful service of these employees, a much enjoyed picnic luncheon was served, and a program of sports and dancing was enjoyed by the 600 present.

PROGRESS ON PROJECT TO SUPPLY EL PASO WITH GAS

Houston, Texas, gas interests, co-operating with the Moody-Seagraves Corporation, are reported to have practically completed arrangements to construct a 218-mile gas line from the Winkler County, Texas, and Lea County, New Mexico, gas fields to El Paso, Texas.

The names of the Humble Oil & Refining Company, The Texas Corporation, Midwest Refining, Marland Oil and Columbian Carbon Company have also been connected with the project. These companies have large producing gas wells in Winkler and Lea counties. The proposed line will be 16 inches in diameter and will have an estimated capacity of 75,000,000 cubic feet of gas per day.

FRANK Q. CANNON PAYS VISIT TO MAINLAND FOR P.C.G.A. MEET

Frank Q. Cannon, manager of the Honolulu Gas Company, Ltd., put in his customary biennial appearance at the Pacific Coast Gas Association convention last month. That he brought with him the genuine spirit of "Aloha" is evident in the invitation which he extended to the convention to meet in Honolulu for its next session. At the luncheon of Thursday, September 20, he was persuaded to repeat his famous Chinese story over the convention amplifier, and for good measure he not only told the story but distributed a boxful of "leis" to those present.

GOVERNMENT HELIUM PLANT TO HAVE 34,000 FT. CAPACITY

The helium plant being constructed by the Government, five miles west of Amarillo, Texas, will be capable of producing 34,000 feet of helium per day.

OKLAHOMA UTILITIES ASSN. EXHIBITS AT STATE FAIR

The Oklahoma Utilities Association is conducting a booth at the Oklahoma State Fair, as in previous years. Motion picture films representing all the branches of the industry are being exhibited. Charts and slides giving facts and figures also are representative of all branches of the industry. Particularly effective is the series of large graphs showing seasonal or daily fluctuations of the service demand, and showing "what readiness to serve means to utility companies." A portable talking movie is of special interest.

RESEARCH WORK FOR NATURAL GASOLINE ASSN. ASSURED

The Natural Gasoline Association of America has given approval to the expenditure called for in the 1928 appropriation for the research program conducted by Dr. G. G. Brown of the University of Michigan. This year's work will be a continuation of that on motor fuels conducted last year.

P. G. AND E. CO., TO INSTALL NEW MULTIPLE WASHER AT REDDING

The Pacific Gas and Electric Company has ordered from the Semet-Solvay Engineering Corporation of New York a Steere multiple washer for installation at its plant at Redding, California. It will have a capacity for treating 60,000 cubic feet of gas an hour.

DOHERTY CONSULTING ENGINEER MOVES HEADQUARTERS TO N. Y.

Harry D. Hancock, consulting gas engineer of Henry L. Doherty & Company, has moved his headquarters to the New York office of the company. He was formerly chief engineer of the Gas Service Company with headquarters at Kansas City.

Gas Industry's Future Lies *in* Selling

(Continued from Page 31)

gas in modern appliances. Instead of saying "use gas" should we not say "For your health's sake take a warm bath every day." Can we not, at least partially, stem the tide toward canned and pre-cooked foods by setting forth in appealing fashion the dietetic delights to be found in hot home-made soup, in a good old pot roast with real vegetables, and so on.

Many false dietetic doctrines are abroad in our land. The vogue for pre-cooked cold cereals, for orange juice instead of clear hot soup and other errors in foods, has been cultivated largely by skillful advertising. We should do our part to bring back more sanity and more good hot food in our diet. Other businesses, and I believe members of the medical profession itself, can, by proper approach, be induced to join with us. We should also seriously consider co-operative advertising on the Coast, as in New England.

For many years the subject of improved forms for gas rates has received the attention of the best brains in the business. The use of stimulating rates with a fixed service fee and lower commodity charges, has been repeatedly urged before rate making bodies all over the country. Already considerable progress has been made, and as result of the educational work previously accomplished, I believe that from now on the advance toward better forms of rates will be rapid. Every gas company must consistently and continuously work for business stimulating forms of rates.

In this connection I would venture the suggestion that in the future, our rate engineers and experts should give a little less thought and study to valuations and cost of service, and a little more to devising schedules and forms which will meet the present and future competition of oil and electricity.

Competition and consumer appeal now shape the policy of nearly every large business in America. If it is to continue its growth and prosperity, our business also must heed the universal trend.

TENTATIVE STANDARD ADOPTED BY NAT. GASOLINE ASSOCIATION

The Natural Gasoline Association of America has announced the adoption of the Reid Vapor Pressure Testing Method as a tentative standard. The adoption became effective September 1st. This action is the result of recommendations from the Technical Committee and the board of directors of the association.

BRANDON FINNEY LEAVES FOR CLEVELAND

Brandon Finney, representing the Gas Furnace Association, leaves the Coast on October 15 for Cleveland, Ohio, in the interest of Southern California furnace manufacturers furthering their tests during the American Gas Association Convention at Atlantic City.

DEATH OF SHARPLES EXECUTIVE ANNOUNCED, SEPT. 21

L. A. Taylor, Pacific Coast manager of the Sharples Specialties Company, died September 21 as a result of burns received in an accident.

PURITAN ICE PLANT IS NOW GAS ENGINE DRIVEN

The Puritan Ice Company of Santa Barbara is installing an additional 170 h. p. gas engine, making their plant entirely gas engine driven.

The twelve signs of the WELSBACH ZODIAC predict a fine winter *for Radiant Heaters*

ACCORDING to all the signs and sun spots and considering all phases of the moon, an unusually big season is about to open for Commercial Managers who feature Welsbach Radiant Gas Heaters. An increasing number of people are recognizing the enjoyable warmth, the cheerful comfort and the economy which gas heaters offer.

This year, opportunity knocks louder than ever before with three brand-new Welsbach numbers—"67", "69" and "71". New designs, new low prices and attractive finishes make these heaters a credit to any show room. Moreover, each one is equipped with the patented Welsbach "Million Dollar" Burner; each has the special choke, flue connection and all the rest of the exclusive Welsbach features which assure perfect operation under all conditions.

These three latest numbers round out the Welsbach line. They enable commercial managers everywhere to profitably meet the constant demand for an attractive, dependable gas heater at a reasonable price.

Welsbach Radiant Heaters will enable you to welcome cold weather. But please be reminded that winter is just around the corner. Better cover yourself with an order now. For complete information address Welsbach Company, San Francisco Office, 863-865 Mission Street.

Member of American Gas Association
Member of Pacific Gas Association

Welsbach

RADIANT HEATERS

Night scene at the International Petroleum Exposition, Tulsa, Oklahoma

October 20-29, Dates *for* Petroleum Exposition *at* Tulsa

THE stage is now set for the greatest International Petroleum Exposition and Congress in history. Tulsa is the place, and October 20-29, the dates. The event is a $10,000,000 exhibition of the latest advances of the oil and related industries.

Attendance from 30 foreign nations, on invitations extended by President Coolidge, and a general congregation of the American industry will give Tulsa a cosmopolitan air during Exposition dates. Some of the principal attractions of this year's Exposition are suggested below:

W. G. Skelly
Pres., International Petroleum Exposition

On the grounds of the Exposition there will be twelve derricks representing the rotary, cable, standard and pumping types in steel and wood. Six of the rigs will be in operation with full crews, but drilling is not permitted to proceed beyond a depth of 600 feet because beyond that level there is a proven gas sand.

Along two lineal miles of booths in the huge Oklahoma, Texas and Scientific and Technical buildings, and the Arcade, will be seen the latest achievements of more than 500 manufacturers for the industry, shown by 250 individual firms.

In the open air blocks huge engine displays have been set up, several at a cost of $15,000 and a few at less than $5,000. A single motor display represents close to 1,000 horsepower.

Included among the larger exhibitions are: a complete absorption plant for the manufacture of natural gasoline; a complete model, operating, of a modern refining plant; complete sets of drilling units, storage plants (models), compressors, bubble towers, gas-lift operation models; various types of trucks, tractors, ditchers, field repair cars, winches, gas coolers, fire extinguisher units, boilers, dispensing apparatus, pipe laying machines, and more.

Scientific and technical aspects of the Exposition are being stressed throughout the program and in the policy of the directors and the general manager—J. Burr Gibbons. In the Scientific and Technical building will be shown what Dr. Charles M. Gould, director of the Oklahoma Geological Survey, calls the greatest exhibition in geology ever presented in the United States. Microscopes will be provided for those interested in micro-palentology and similar branches. The seismograph, torison balance and magnetometer will be shown and their functions explained in this building. Aerial maps, charts on crooked holes, and other interesting illustrations and graphs will line the walls.

The United States Bureau of Mines' safety car is on the grounds and the Bureau, cooperating with the National Safety Council, the safety section of the Mid-Continent Oil and Gas Association and the safety committee of the International Petroleum Exposition and Congress, will present a full program of safety demonstrations with teams of men working tests and showing the uses of modern safety appliances and first aid methods.

Meeting in special conventions at the Exposition are the American Institute of Mining and Metallurgical Engineers, the United States Bureau of Mines, the National Safety Council, the American Petroleum Institute, the American Association of Petroleum Geologists, the American Association of State Geologists, the Natural Gasoline Association of America, the Natural Gasoline Supply Men's Association, the Purchasing Agents Association, and other associations.

The associations combined in the safety program will give a banquet on the night of October 22 in the Crystal Ball room at the Mayo hotel. At the banquet the teams entered in the safety demonstrations will be honored, and gold, silver and bronze medals will be presented to the teams winning first, second and third honors, respectively, in the safety proficiency tests. The International Petroleum Exposition and Congress loving cup will be awarded to the first team.

Reduced rates to the Exposition have been accorded on all the lines in the United States and Canada and an attendance of between 250,000 to 300,000 is expected.

The Fifth Annual International Petroleum Exposition and Congress will be thirty-five per cent larger than last year's oil show. More land has been added to the grounds; 160 acres of level ground border on the exposition plant and will provide ample free parking space.

The International Petroleum Exposition and Congress has been endorsed by the President of the United States under authorization of Congress, by all the state departments interested in the industry, and by all the leading associations connected with the industry.

Among the special exhibitors are listed: the American Petroleum Institute, the United States Geological Survey, the American Institute of Mining and Metallurgical Engineers, the United States Bureau of Mines, the Natural Gasoline Supply Men's Association, the safety section of the Mid-Continent Oil and Gas Associations, the National Safety Council, the American Association of Petroleum Geologists, the Purchasing Agents Association of Tulsa, the Arkansas Geological Survey, the Oklahoma Geological Survey, the School of Mines and Metallurgy of Missouri, Tula University and Tulsa library.

PUEBLO, COLO., TO HAVE LOWER INDUSTRIAL GAS RATES

Lower rates for industral users of natural gas in Pueblo, Colorado, were announced early in September by A. M. Talbott, manager of the Pueblo Gas and Fuel Company. The rates announced are as follows: For 400 cubic feet or less, 90 cents (minimum charge; next 600 feet, 15 cents a hundred; next 1000 feet, 12 cents per hundred; next 1000 feet, 7½ cents per hundred; next 7000 feet, 6 cents per hundred; next 90,000 feet, 5 cents per hundred; next 40,000 feet, 2½ cents per hundred, and all in excess of 500,000 cubic feet, 2 cents per hundred feet.

D. W. HARRIS TO BE V. PRES. OF ARKANSAS NATURAL

D. W. Harris, former treasurer of the Empire Gas & Fuel Company, recently resigned that office to become vice-president and general manager of the Arkansas Natural Gas Corporation at Shreveport, La., also a Doherty organization. Ralph L. Morton, Jr., assistant treasurer, was appointed to the post vacated by Mr Harris.

SO. CAL. GAS COMPANY APPLIES FOR RIGHT TO SERVE PERRIS

Southern California Gas Company has applied to the Railroad Commission of California for a certificate of public convenience and necessity authorizing it to exercise franchise rights for the distribution of gas in the city of Perris, Riverside County, for whch application has been made to the Board of Trustees of that city.

NEW ORLEANS, LA., TO USE NATURAL EXCLUSIVELY

New Orleans Public Service Inc., expected to have the entire city burning natural gas before the latter part of September. The city was divided into zones and each zone made ready as a unit for introduction of the new fuel.

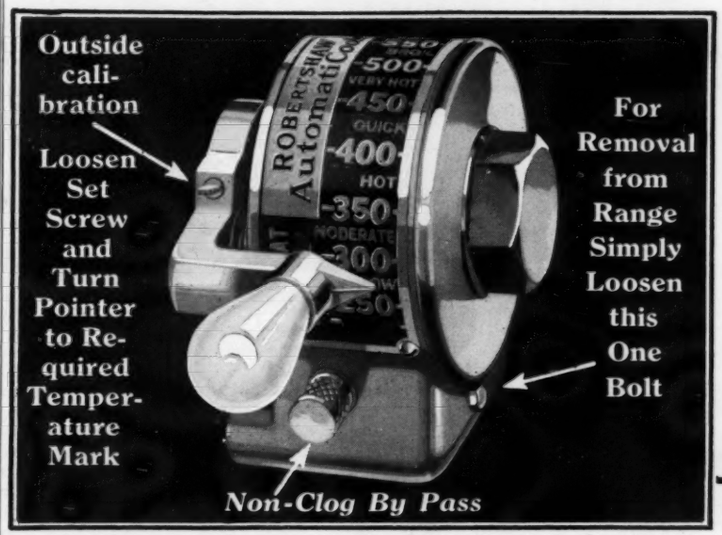
LATTIMER-STEVENS EXECUTIVE ATTENDS CONVENTION

Charles Stevens, vice-president of the Lattimer-Stevens Company, Columbus, Ohio, accompanied by Hugh Cathrell, attended the Pacific Coast Gas Association Convention at Coronado, September 17-20.

CARBON BLACK PLANT FOR CASPER CREEK, WYO.

Following the bringing in of a 20,000,000 cubic feet per day gas well at Casper Creek, Wyoming, it is announced that a carbon black plant will be erected at once at the well.

GAS COMPANIES and STOVE DEALERS



Appreciate the Exclusive Advantages of the "B" Type

ROBERTSHAW AutomatiCook

Outside Calibration. Takes just a few seconds to change the temperature setting if required, by means of a convenient set-screw on the temperature pointer. Merely loosen the set-screw, move the pointer to the proper temperature mark on the dial, and then tighten the set-screw.

Quick Removal. Should the "B" Type AutomatiCook become damaged for any reason, necessitating replacement, it can be removed without disconnecting the range or disturbing the linings or the piping. Requires no mechanical servicing or repairs on the job. Simply loosen one bolt, replace the Thermostat with a spare and tighten the bolt. The job can be done in less than a minute's time.

Non Clog By-Pass Pilot. Will not clog nor bind. Always moves freely and maintains its adjustment. Eliminates servicing, adjusted by turning either to the right or left.

Non-Corrosive Valve Seat. The AutomatiCook is now being equipped with a Raised Non-Corrosive Valve Seat which will resist the corrosive action of gas, eliminating any possible trouble from this source.

Write for 8-Page Folder, illustrating and describing the above advantageous features.

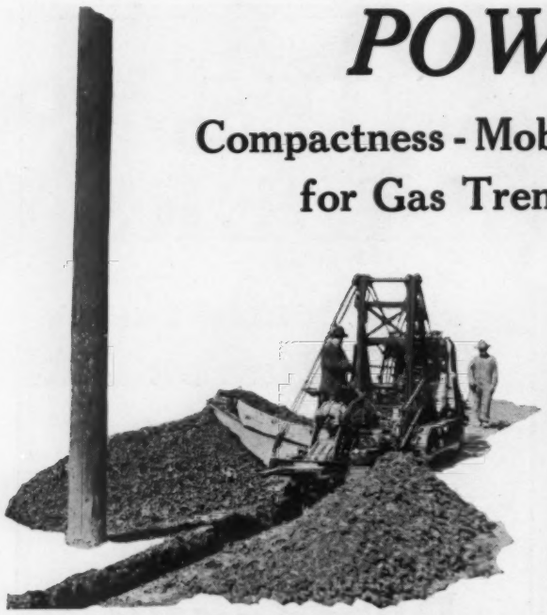
ROBERTSHAW THERMOSTAT CO.

Youngwood, Penna.

The Robertshaw AutomatiCook is now used on more than 80 leading makes of Gas Ranges

POWER

Compactness - Mobility - Economy for Gas Trench Work



Power, sturdiness, compactness, comparative lightness of weight; ease, economy and efficiency of operation, together with extreme mobility are a few of the many features that have made The Baby Digger desirable and almost essential for efficient, economic Gas trench work. Within its digging range, 5′ 6″ depth and 10″ to 23″ in width this little trencher is unsurpassed for performance and economy.

Write today for full specifications and prices.

The Cleveland Trencher Co., 20100 St. Clair, Cleveland, Ohio

"Pioneers of the Small Trencher"

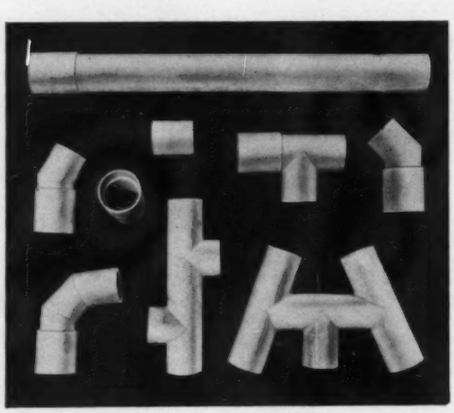
EDWARD R. BACON CO., 17th at Folsom Streets, San Francisco

THE BABY DIGGER

VITEX

Increases Draft

Improves Combustion



Absolutely Non-Corrosive

The Perfect Gas Vent and Flue Pipe

Samples, prices, and installation information gladly furnished on request

Manufactured by

PLANT RUBBER & ASBESTOS WORKS

537 Brannan Street, San Francisco, Cal.

Application *of* Meters *to* Field *and* Plant Problems

(Continued from Page 38)

to extraction of gasoline and is the cash register of the company where the gas is sold to the public utility. In addition to the measurement of gas to and from the plant, the orifice meter is adapted to the measurement of steam to the stills. This record when checked against the meter chart of fuel consumption by the boilers will show whether or not these units are operating at the proper efficiency. In a like manner the absorption oil to the towers and the cooling water used in the various units may be measured and the economy of oil and water consumption may be closely checked.

The refinery supplies many more uses in connection with measurement, the principle ones being the metering of crude oil from the fields; the measurement of the various cuts from the respective fractionators; measurement of acid; measurement of caustic solution; and even heavy grades of fuel oil and sludge can be metered with the proper care of the instruments.

The general term orifice meter or velocity type meter may apply to any instrument that will measure the drop in pressure or differential across a thin orifice plate installed in a pipe line. The final result may be accomplished by the use of various types of instruments. The most popular record is obtained by the use of the differential recording gauge. This gauge, generally known as an orifice meter gauge, shows a complete daily or weekly record of the pressure in in the line and the differential drop across the orifice. It is used when a permanent record is demanded.

When only approximate measurements are desired it is not necessary to go to the expense of recording meter installations. A manometer or U-gauge can be employed and instantaneous readings obtained to be used preferably as a reference for a plant operator.

Another popular type of indicating orifice meter is the Meriam Flow Meter. This instrument is constructed so as to read inches of water directly in a straight glass tube. The scale is calibrated for use with or without a water seal and special scales may be constructed to read in any unit to flow that is desired. The meter is built to stand high working pressures and uses mercury as the indicating medium. The standard installations for orifice meters may be employed.

Several plants and refineries have adopted the use of this type of indicating orifice meter in order to show the operators that the various units are discharging their functions periodically.

The use of any of the various styles of metering instruments depends entirely upon the individual and his needs, and in conclusion, it might be said that the best instrument for any kind of service is the one that renders the desired results.

CHANGE IN DISTRIBUTION OF GAS AT BARTLESVILLE

B. C. Adams, general manager of the Gas Service Company, with general offices in Kansas City, has announced that the gas distribution business at Bartlesville, formerly supplied by the Bartlesville Gas & Electric Company, will in the future be under the Gas Service Company's jurisdiction. Both companies are Doherty properties. R. W. Curran, former manager of the Bartlesville Gas & Electric Company, will continue in charge of the gas service at Bartlesville.

ROCKY MOUNTAIN OIL AND GAS ASS'N TO MEET NOV. 23

According to an announcement made by Walter F. Brittan, secretary of the Rocky Mountain Oil & Gas Association, a meeting of that organization will be held November 23 and 24, at Great Falls, Montana. This decision was reached at a meeting of the board of directors attended by L. R. Hannah of Shelby; G. C. Stevenson, O. I. Deschon and M. C. Henderson, president of the Great Falls chapter; A. E. O'Brien, Lewiston; C. H. Brown, Billings; and Walter F. Brittan of Great Falls.

W. E. TIERNEY IS APPOINTED BOTFIELD REPRESENTATIVE

Botfield Refractories Co., Philadelphia, Pa., manufacturers of Adamant Fire Brick Cement, Adamant-Adachrome and The Adamant Gun, announces the appointment of Mr. W. E. Tierney as its representative in the South and Southwest. Mr. Tierney is a mechanical engineer and a graduate of Tulane University. Mr. Tierney's headquarters will be in New Orleans.

WILLIAM J. KYLE JOINS BYLLESBY STAFF

William J. Kyle has joined the sales and advertising staff of the Chicago office of the Byllesby Engineering and Management Corporation, as power sales engineer. Mr. Kyle's experience in this line of work includes positions with the Westinghouse Company and various other utility and manufacturing organizations.

FLAGSTAFF, ARIZ. GIVES GAS COMPANY FRANCHISE

Flagstaff, Arizona has granted a franchise to the Flagstaff Gas Company to furnish that municipality with gas. The new company is authorized to sell $150,000 of its $300,000 capital stock at a minimum price of not less than 90 per cent of the par value. Leon Melekov is president, and Orin C. Compton is secretary of the company.

C. B. BABCOCK COMPANY IN NEW QUARTERS

The C. B. Babcock Company has moved its Los Angeles office to 2118 Atlantic Street, where a complete display of gas appliances, including Humphrey Radiantfire Heaters, Roper Ranges, Safety Gas Main Stopper Equipment and Johnson Industrial Burners, is maintained.

WRIGHT L. FELT TRANSFERRED TO MT. VERNON, OHIO

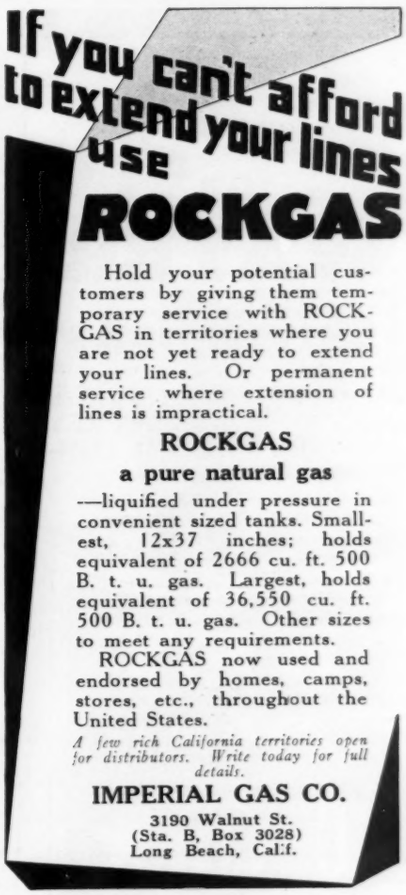
Wright L. Felt, in charge of the Dallas office of the Hope Engineering Company since it was established in 1925, has been transferred to the home office of the company at Mt. Vernon, Ohio. C. K. Noyes, associated with the Dallas office since last May, will have charge of the Dallas office.

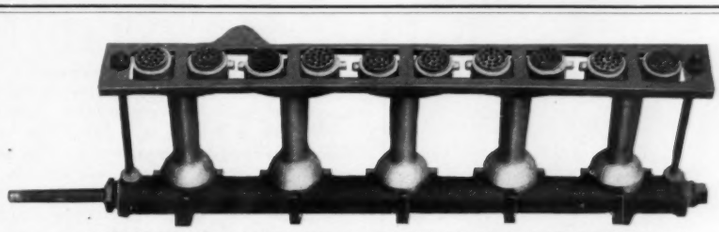
JIM REED OF C. & G. COOPER CO. RECOVERING FROM ILLNESS

Jim Reed, Pacific Coast Manager of the C. & G. Cooper Company, was operated September 11 for appendicitis. Following two weeks in the hospital Mr. Reed continued his convalescence at Carmel, California. He is expected to be back in his office about the tenth of this month.

GALVESTON GAS CO. OFFICIAL TAKES POSITION AT DALLAS

L. P. Leith, secretary and treasurer of the Galveston Gas Corporation, of Galveston, has been made general auditor of the Texas Cities Gas Company of Dallas, which has taken over the interests of the Galveston Gas Corporation.


If you can't afford to extend your lines use
ROCKGAS
Hold your potential customers by giving them temporary service with ROCKGAS in territories where you are not yet ready to extend your lines. Or permanent service where extension of lines is impractical.
ROCKGAS
a pure natural gas
—liquified under pressure in convenient sized tanks. Smallest, 12x37 inches; holds equivalent of 2666 cu. ft. 500 B. t. u. gas. Largest, holds equivalent of 36,550 cu. ft. 500 B. t. u. gas. Other sizes to meet any requirements.
ROCKGAS now used and endorsed by homes, camps, stores, etc., throughout the United States.
A few rich California territories open for distributors. Write today for full details.
IMPERIAL GAS CO.
3190 Walnut St.
(Sta. B, Box 3028)
Long Beach, Calif.



AT LAST—A Real BUNSEN BURNER

The vertical verturi tube burner has always been recognized as the scientific way to burn gas. Produces the hottest flame of any gravity burner.
The most satisfactory Laboratory burner known to Science has now been made available to the public in the Perfection Multiple Unit Furnace.
Will burn equally efficiently on either high or low pressure. Requires no adjustment.

L. H. FREYMUTH, JR., 311 E. Pico St., Los Angeles, Calif.

The War Department, after a two year test, has purchased 140 No. 1 and No. 2 Electrogas Floor Furnaces for the San Francisco Presidio.

quality ELECTROGAS FURNACE CO. SAN FRANCISCO economy

GAS
or
WATER
Connections

whether screw thread or gasket, should be made up with KEY SPECIAL PIPE JOINT COMPOUND.

KEY SPECIAL PIPE JOINT COMPOUND is not a quick hardening cement, but a plastic lubricant and a filler that will seal the most obstinate joint with ease. It covers more surface than an equal volume of red or white lead, thereby reducing the cost. It is waterproof—and there is no waste.

Manufactured by

E. A. Key Co., Inc.

1431 Santa Fe Ave.
Los Angeles, Calif.

Distributors in all principal cities.

WRITE FOR FREE SAMPLE

St. Louis Baking Contest Revives Interest *in* Home Cooking

By NORMAN B. TERRY

Laclede Gas Light Company, St. Louis, Missouri

INVESTIGATIONS during the past year or two have revealed the fact that home baking of breads, cakes and pies is dwindling alarmingly. Many reasons are offered for this decrease and perhaps the most logical is the factor of difficulty in preparation.

The home service classes conducted by The Laclede Gas Light Company are doing much to stop this exodus from the home kitchen of St. Louis. Instruction is given in the preparation of dishes, and new, less difficult methods of preparing foods are shown. All questions pertaining to the home are answered and all women attending the classes are given free copies of new recipes.

In an endeavor to check up on the effectiveness of its Home Service classes and to learn if housewives are really interested in and benefiting from this instruction, the Laclede Company recently conducted canning and baking contests with highly satisfactory and pleasing results. Generous newspaper space announced the contests and pamphlets picturing the four gas ranges to be given as prizes were mailed to a large number of women. One show window was devoted to the contest. This window contained the four prize ranges and a large placard explained the rules of the contest.

When the contest closed more than 500 entries had been received. These included the favorite dishes of many nations, although the greater part of the entries was composed of American dishes.

According to Miss Helen Wethrell, director of the Home Service Department of the Laclede Company, the most popular entry was angel food cake, although many contestants confined their efforts to bread baking. This fact was attributed to the frequency with which the classes gave instruction in bread baking.

Each entry was judged on its quality and there was not a single occasion where a contestant objected to the awarding of the prizes.

Aside from the general publicity which the company received, the contest instilled interest in home cooking and emphasized the ease and efficiency of cooking with the modern gas range. The prizes consisted of two ranges from each of the two lines the Laclede company sells and of course the quality and efficiency of these ranges were stressed, both in pre-contest copy and at the awarding of the prizes.

Prizes were awarded in the Home Service Department of the company. George B. Evans, president of the Laclede company, addressed a few remarks to the large crowd of contestants gathered in the auditorium for the presentation of the prizes. Miss Helen Wethrell presented the prizes to the winners.

The many requests for the prize winning recipes is conclusive evidence of the success of the contest.

CITIES SERVICE OFFICIAL HAS PROMOTION

Bert Milam, assistant compressor station superintendent for the Cities Service Gas Company, with headquarters at Bartlesville, Oklahoma, has been transferred to Wichita, Kansas, effective September 1. His new duties will place him in direct charge of the six compressor stations that boost natural gas from the Texas Panhandle to Kansas communities. Milam has been engaged in the natural gas business since 1910 and became affiliated with the Empire Companies in 1912. He was promoted to assistant compressor station superintendent in 1925.

LOMPOC, CALIF., WILL GET NATURAL GAS

Santa Maria Gas Company has applied to the Railroad Commission of California for a certificate authorizing it to extend natural gas service to the city of Lompoc, and also to construct the necessary gas transmission line between Santa Barbara and the Santa Maria oil fields, to make available natural gas from the Ventura and Goleta fields.

WINNFIELD, LA., GRANTS 25-YEAR GAS FRANCHISE

Winnfield, Louisiana, recently granted a 25-year gas franchise to the Pineville Gas Company. A. V. Miller, superintendent of the Pineville company, stated that gas would be supplied the city about October 15th.

LEE'S SUMMIT, MO., TO HAVE NATURAL GAS SOON

The Lee's Summit, Missouri, Gas Company anticipates supplying gas to the citizens of that city before cold weather Pipe is now being laid throughout the city.

NATURAL GAS TO BE SUPPLIED HUGO, OKLAHOMA

The Community Natural Gas Company is constructing a natural gas distribution system at Hugo, Oklahoma. A line will be built from Paris, Texas, to Hugo, connecting with the Lone Star Company's transportation system. The company has leased headquarters in the Eastland building, Hugo. Approximately 150 men will be employed on the project.

CITIES SERVICE CO. HOST TO OTTAWA, KAN., BUSINESS MEN

Ottawa, Kansas, business men were entertained by the Cities Service Gas Company on September 13 at a dinner and meeting held at the Ottawa compressor station. The dinner was served cafeteria style on the lawn, and was followed by speeches by officials of the Cities Service Gas Company, the Gas Service Company, and representative business men of Ottawa.

SANTA FE SPRINGS, CALIF., TO HAVE NEW ABSORPTION PLANT

The Texas Company will construct an absorption natural gasoline plant at Santa Fe Springs, which will have a capacity of 40,000 gallons per day. This, with the old plant, gives the Texas Company a capacity of 55,000 gallons per day at this location. The company will build the plant itself.

MOODY-SEAGRAVES PURCHASES CONTROL OF FOUR COMPANIES

The Moody-Seagraves Company of Houston, Texas, has purchased controlling interests in the Houston Gulf Gas Company, the Southern Gas Utilities Company, and the Western Gas and Fuel Company. The deal involved nearly $21,000,000.

Underground Storage *for* Natural Gas

(Continued from Page 29)

oil production, and changes in gas fuel requirements of oil operators for drilling, refining, etc., the latter uses having priority over gas sold to distributing companies.

Natural gas, as delivered to the gas companies in the field, requires heavy investments in compressor equipment and pipe lines in order to transport it to markets which are often located at considerable distances from the sources. For instance, to transport gas from the Ventura Avenue Field to Los Angeles, a distance of about 75 miles, three field compressor stations and pipe lines have been constructed, with a total daily delivery capacity of 112,000,000 cu. ft., representing a combined investment of $5,400,000. At prevailing field and market prices for gas, the gas supply must have a life of at least five years in order to justify a pipe line project such as those mentioned.

There is now a considerable surplus of gas in the Ventura field above the combined pipe line capacity. This condition has existed for several years and would normally continue during the period of flush or peak production. At present there is no market for additional gas in Southern California. Thus, under the present system of unregulated gas production, it is economically impossible to provide transportation facilities equal to the peak production, even in the case of a conservatively drilled and long-lived field such as Ventura Avenue.

This economic limitation is relatively much lower in the case of town-lot fields such as Santa Fe Springs and Alamitos Heights. Daily gas production of the former declined from 510,000,000 cu. ft. to 50,000,000 cu. ft. in eleven months. One gas company constructed two compressor stations and two 16-inch pipe lines from this field during the flush period. Before the second unit was completed there was not enough gas to load it, and within a few months further decline rendered it entirely inoperative.

In Alamitos Heights production dropped from a peak of 102,000,000 cu. ft. to 29,000,000 cu. ft. per day in three months. One company placed orders for compressors of 10,000,000 cu. ft. capacity when the surplus gas production amounted to 72,000,000 cu. ft. daily. When their installation was completed, three months later, there was available in the field only 1,500,000 cu. ft. of gas.

These examples are cited to show the waste of gas which inevitably accompanies the development of an oil field in California, and which is aggravated by the "get it now or never" drilling activity of a town-lot field.

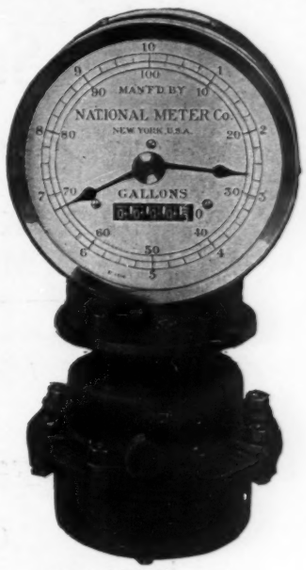
In a field where the leaseholds are large and the operators responsible, waste of gas may be minimized by co-operative drilling and producing agreements between producers, and much progress has recently been made in this direction. It is generally conceded, however, that in a town-lot field, control of production is not obtainable either by concerted action of producers or through regulation by public authority. The only method which has been at all successful under these conditions, is the pro-rating of oil receipts by pipe line companies, where the latter are in position to restrict transportation of oil out of the field. Such conditions do not exist in most California fields.

FLUCTUATING GAS DEMAND

Coupled with these conditions are the hourly, daily and seasonal variations in demand on the gas utility systems. During December, 1927, the domestic demand for

Empire Oil Meters

Positive Displacement Oscillating Piston Type



Simple in construction, with low cost of maintenance.
Accurate and reliable.
Specially adapted for Cracking and Absorption Processes.
For Gas Companies — Refiners and Distributors of Gasoline and all distillates of petroleum.
For measurement of Crude oils, cold or hot.
Sizes for ½" to 6" pipes.
Standard stock meters for working pressures up to 150 lbs.
Special High Pressure Meters according to specifications up to 600 lbs. working pressure.
Made either with large Vertical Dials or Horizontal Registers.

National Meter Company

San Francisco 299 Broadway—New York Los Angeles
1048 Folsom Street 643-645 Santa Fe Ave.

Send for Descriptive Bulletin 110

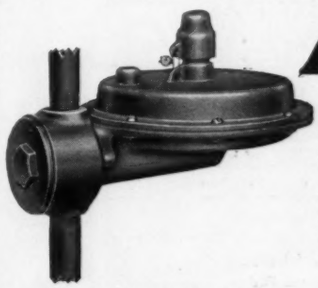
HEATING--DOMESTIC
and
INDUSTRIAL
GAS APPLIANCES

C. B. Babcock Company

135 Bluxome Street
San Francisco

2132 Atlantic Street
Los Angeles

MODEL 10 SERIES
With or Without Mercury Seal



Spring Type
Also furnished in Dead Weight Type

Reynolds Gas Control Since 1892

Products for all kinds of Pressure Reduction—for either artificial or natural gas.

GOVERNORS — Intermediate Pressure, Triple Outlet, Holder, Toggle Type Street.

REGULATORS—High Pressure Service, Low Pressure Service, High Pressure Line, Single and Double District Station.

VALVE—Automatic Quick Closing Anti Vacuum.

REYNOLDS GAS REGULATOR COMPANY
Anderson, Indiana

Stockton Fire Brick Company

FIRE BRICK, INSULATING BRICK
HIGH TEMPERATURE CEMENT

High Grade Refractories
for

GENERATOR LININGS
CHECKERS
BOILER SETTINGS

OFFICE:
Russ Building,
San Francisco

WORKS:
Stockton,
California

A full line of Air and Gas Equipment

Air Compressors
Portable Compressors
Pneumatic Tool
Turbo Gas Boosters
Cameron Pumps
Gas Compressors
Rock Drill Equipment
Oil Engines

Ingersoll-Rand Company
11 Broadway New York
Branch Offices and Service Stations the World Over

Ingersoll-Rand Company of California
1460 East Fourth Street Los Angeles, Calif.
Rialto Bldg., San Francisco, Cal.

Chas. C. Moore & Co. Engineers, Inc.

CONTRACTORS FOR COMPLETE PLANTS

High Grade Machinery

The Babcock & Wilcox water tube boilers
Corliss high speed and poppet valve engines
Babcock & Wilcox superheaters
Hamilton compressors
Green fuel economizers
Wheeler Condenser & Engineering Co. condensing machinery
Cochrane feed water heaters (open and closed)
Cochrane feed water metering heaters
Cochrane feed water softeners (hot and cold processes)
Cochrane steam and oil separators
Cochrane flow meters
Moore automatic fuel oil regulators
Diamond soot blowers
Lagonda tube cleaners
Copes feed water regulators
Lagonda automatic boiler stop valves
Leslie reducing valves

And All Power Plant Auxiliaries

Address our nearest office for catalogs and complete information

Home Office: SAN FRANCISCO, Sheldon Bldg.

New York City, Hudson Terminal Bldg.
Los Angeles, Central Bldg. Portland, Gasco Bldg. Seattle, L. C. Smith Bldg.
Salt Lake City, Kearns Bldg. Honolulu, T. H. Phoenix, Heard Bldg.
Vancouver, B. C., Standard Bank Bldg.

Los Angeles, Orange, San Bernardino and Riverside counties, now served by natural gas, varied from 98,785,000 cu. ft. to 197,884,000 cu. ft. These violent fluctuations, amounting in total to about 100,000,000 cu. ft. daily within a single month, are due to the general use of gas for house heating, and a wide temperature range.

Deliveries of gas to industrial consumers are curtailed during periods of peak domestic demand, and by this means daily fluctuations up to about 65,000,000 cu. ft. can be absorbed. Storage holders are employed to absorb hourly fluctuations in load and supplement delivery from field stations during peak hours.

An ideal condition for underground storage of gas exists in fields where the gas produced from the lower horizons can be stored in partially depleted upper zones. The necessity of transporting gas from the point of production to a distant field for storage is eliminated.

In an attempt to do this considerable experimental work was done in the Ventura Avenue field, where a large surplus of gas exists, but rock pressures of about 1150 pounds were encountered and the project temporarily suspended. One producing company is now assembling equipment with which they will be able to compress gas to sufficient pressure to enter the oil zone and will proceed to inject gas even at these relatively high pressures. Surplus gas from this field is now being transported 105 miles to Montebello and West Coyote, and 130 miles to Buena Vista Hills for storage underground.

Plans are now under way which contemplate the storage of expected flush gas production from deep zone drilling at Santa Fe Springs in the upper horizons.

From the standpoint of a natural gas utility, the success of a storage project depends on the ability to store gas during the summer and withdraw it during peak winter periods. This plan, however, in some instances may not be realizable, because control of oil and gas production is vested in the oil company, and due to its demands for oil, the oil company may wish to produce oil and stored gas at a time when the latter is unmarketable. This difficulty may be overcome by re-injection of the stored gas.

An obstacle to the successful consummation of a joint storage undertaking is the desire of the oil operator for continuous injection of gas to increase ultimate recovery of oil, as opposed to the need of the gas utility for the return of stored gas.

Southern Counties Gas Company is now having stored in various fields as previously outlined, a maximum of 26 million cu. ft. daily. This is the limit of facilities for transportation and injection. Southern California Gas Company is storing a maximum of 14 million cu. ft. daily.

Many of the oil operators now realize the tremendous benefits to be derived from gas injection underground, and through storage projects undertaken jointly with the natural gas utilities, the work of conservation is being actively prosecuted, with the result that oil recovery will be increased and natural gas supply prolonged to the mutual benefit of the operators, the utilities and the public.

MAGNOLIA PETROLEUM APPLIES FOR RENEWAL OF PERMIT

The Magnolia Petroleum Company of Dallas has applied to the state railway commission of Texas for a renewal of its permit to manufacture carbon black from residue gas in Stephens County, Texas. The company's three year permit expires November 5, 1928, and the permit which they seek is for five years with a privilege to burn as much as 5,000,000 cubic feet of gas daily.

OKLA. NORTHERN UTILITIES SPREADS METER KNOWLEDGE

C. W. Robbins, general gas superintendent of the Oklahoma Northern Utilities Company, with offices at Ponca City, Oklahoma, in a communication to *Western Gas* writes that the company has recently tried an interesting innovation in the town of Garber, Oklahoma. An excerpt from Mr. Robbins letter follows:

"After talking the matter over with the local school superintendent, our plant superintendent assisted in conducting a series of lectures in the science class of the High School, on the subject of gas meters, their construction, and how to read them. At the conclusion of the course, the pupils handed in themes which were limited to a minimum of two hundred words and a maximum of five hundred words. The best paper submitted was awarded a prize of $5.00, the second best a prize of $3.00 and the third a prize of $1.50, these prizes being given by the company. Considerable interest was manifested and the contents of the papers were much higher than expected. The first and second prize papers were printed in the local paper. So far as we know, this is the first time this has been tried and the results were so satisfactory that we intend to try it out in our other plants when school opens this fall."

GAS DEPT. OF B. C. ELECT. R. R. REPRESENTED AT EXPOSITION

The gas department of the B. C. Electric Railway Company was represented at the British Columbia Provincial Exhibition held at New Westminster, B. C., by an individual booth in the Manufacturers' Building.

Bearing the legend "Your City's Fuel Bin" a large sketch of the company's plant at New Westminster occupied the back of the booth. On the left hand was a list of churches, garages, apartment blocks, stores, offices, and private houses in New Westminster in which gas heating apparatus had been recently installed. On the other side was a notice which pointed out that during the last quarter of a century only ten miles of gas mains were laid in New Westminster, but that since the B. C. Electric had taken over the city plant two years ago, the company had added 27 miles to the system, thus keeping pace with the development of the city.

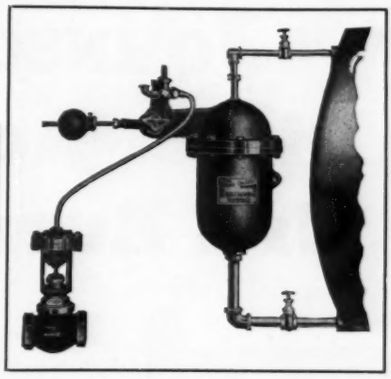
McClary gas ranges, Servel refrigerators, Tappan ranges, gas furnaces, fires and automatic water heaters, were all represented among the lines shown at the booth. A model gas meter, with a detailed explanation of how gas is registered occupied space at one side of the stand, while an artistic fireplace formed an attractive setting for one of the gas fires.

GAS COMPANY EXTENDS SERVICE TO CAMP IN GRIFFITH PARK

Extension of gas mains from the Griffith Park Clubhouse to the girls camp which over looks the clubhouse was recently completed by the Southern California Gas Company. The camp can be reached only by a rugged mountain trail, making construction work difficult. Nearly a mile of pipe was extended from the clubhouse along the trail. The trail was backfilled as soon as a section of pipe was laid so that the dwellers in the camp could have free access at all times. Two sections of heavy duty ranges and a 30-gallon water heater were installed in the camp, being taken up the trail by burro.

ROXANA FIELD TO SUPPLY MARSHALL, OKLAHOMA

The Centralwest Gas Company is assembling material for a gas line from the Roxana field to Marshall, Oklahoma.



Dependable—of course

The Vigilant Liquid Level Regulator, by remote control, is designed to maintain a constant oil level in both the absorbing tank and the still, where gasoline is manufactured by absorbing the gasoline in oil and subsequently separating it from the oil by distillation.

This regulator will accommodate itself to any type of absorber or steam still, and maintain a constant oil level under pressure.

Thirty-five years of successful experience in the manufacture of regulators assure to the purchaser absolutely accurate and reliable equipment.

Write for Catalogue

The Chaplin-Fulton Mfg. Co.

Organized 1884—Oldest Builders of Gas Regulators in the Country. Built in all Sizes From 1 Inch to 24 Inches; For All Service. 1 oz. up to 1,600 lbs. Pressure to Square Inch.

28-40 Penn Avenue Pittsburgh, Pa.

REPRESENTATIVES:

WESTCOTT & GREIS, Inc.
Sales and Service
Dallas — Los Angeles — Tulsa

JNO. W. CRAWFORD
Sales Engineer
1855 Industrial Street Los Angeles

W P & S

DESIGNERS, FABRICATORS & ERECTORS OF PRODUCTS OF STEEL

Investigate WESTERN Hi-Pressure Unit Gas Holders

WESTERN PIPE & STEEL COMPANY OF CALIFORNIA

5717 Santa Fe Ave. LOS ANGELES 444 Market Street SAN FRANCISCO

FACTORIES: LOS ANGELES · SOUTH SAN FRANCISCO · FRESNO · PHOENIX · TAFT

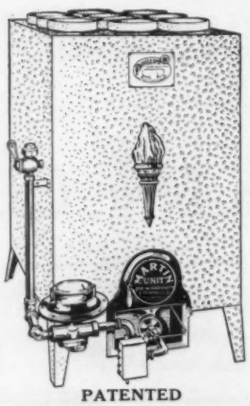
W P & S

JOHNSON Direct-Acting Urn Burners

Designed to provide maximum efficiency with economical gas consumption. Fitted with famous Johnson Patented Direct Jet Gas Regulators which make an absolutely adjustable gas orifice. Placed half inch from urn or object being heated, hence flame is always close whether turned high or low. Write for full details of the advantages of the Johnson Patented Direct-Acting Orifice Gas Valve.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Pacific Coast Representative—C. B. Babcock Co.
135 Bluxome Street San Francisco, California



PATENTED

Martin Unit Gas Furnaces

ARE THE RESULT OF 38 YEARS HEATING EXPERIENCE
MADE IN FOUR SIZES
Electric, Thermostat or Manual Control
Approved by A. G. A. Laboratory and by the City of Los Angeles
Write for your copy of "Modern Heating Methods"

PHILLIPS HEATING, VENTILATING & MFG. CO.
1710 W. Washington St.
Los Angeles, California

Live Agents Wanted

TESTING LABORATORY A.G.A. APPROVED

SOUTH CHESTER STEEL PIPE

Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

SOUTH CHESTER TUBE CO.
Chester, Pa.

MABER M. ROPER ON COAST IN SEPTEMBER

Maber M. Roper of the Geo. D. Roper Corporation, Rockford, Illinois, spent the month of September on the Coast with C. B. Babcock, Pacific Coast Manager for the Roper Corporation. Mr. Roper attended the annual convention of the Pacific Coast Gas Association at Coronado.

P. G. AND E. TO SERVE WILLOWS, CAL., WITH GAS

Pacific Gas and Electric Company of San Francisco has applied to the Railroad Commission of California for authority to exercise a franchise granted by the Board of Trustees of the town of Willows, Glenn County, to distribute artificial gas in said town for a period of 35 years.

NEW BOOKLET ON PROGRESS IN GAS RANGE MANUFACTURE

The George M. Clark Company of Chicago, manufacturers of gas appliances, has published a booklet entitled "A Record of Progress," which shows the progress made in the development of gas ranges during the past 50 years, especially as regards the trend toward simplicity in construction.

L. D. McLOUTH, PAN AMERICAN ENGINEER, DIES OF INJURIES

L. D. McLouth, research engineer for the Pan American Petroleum Company, received fatal injuries in an automobile accident in Los Angeles, California, on September 6. He died the following day without regaining consciousness.

ABSORPTION PLANT UNDER WAY AT FARMINGTON, N. M.

Work on the gasoline absorption plant at Farmington, New Mexico, has begun and is expected to be carried on to a speedy finish, according to H. N. Longfellow, president of the Hunting Park Oil Corporation, which is building the plant.

WYNNE WOOD, OKLA., TO HAVE NATURAL GAS

The Lone Star Gas Company is laying an 8-inch gas pipeline from Wynne Wood, Okla., to Pernell to replace a 4-inch line. From 125 to 175 men are engaged in the work, making their headquarters at Wynne Wood.

JAMES G. MAWSON APPOINTED MANAGER OF ARKANSAS CO.

James G. Mawson, formerly manager of Augusta, Kansas, office of the Western Distributing Company, has been appointed manager of the Arkansas Valley Gas Company at Arkansas City, Kansas. J. H. Crawford was former manager at Arkansas City.

COLEMAN, TEXAS HAS LOWER GAS RATES

Coleman, Texas, will have lower gas rates, authorized by the Texas Utility Commission and put into effect by the Coleman Oil & Gas Company. Gas consumption over 5,000 cubic feet has been reduced from 65 cents to 60 cents per thousand.

MANUFACTURERS' SECTION OF A.G.A. HOLDS CONFERENCE

The first conference of the Manufacturers' Section of the American Gas Association was held at the new A.G.A. Testing Laboratory Building, Cleveland, Ohio, on September 14, the day following the dedication of the new Laboratory.

LOUISIANA-MEMPHIS GAS LINE CONSTRUCTION STARTED

Work has been begun on the Memphis Natural Gas Company's $10,000,000 line from the Monroe, Louisiana gas fields to Memphis, Tennessee, and crews on each side of the Mississippi River are actively engaged in laying the line.

Ford, Bacon & Davis have been awarded the contract for the line, which will be 212 miles in length and 18 inches in diameter.

The Interstate Natural Gas Company of Monroe will supply the gas at Monroe to the Memphis Natural Gas Company, which in turn will supply gas to the Arkansas Light & Power Company and to the Mississippi Light & Power Company, two of the Couch utilities, for distribution in Southeastern Arkansas and in Mississippi, respectively. Memphis Light & Power Company will distribute gas in that place.

Ralph E. Davis of New York has been appointed as engineering supervisor of construction, while William Von Pool and E. G. Hill have been named in charge of construction for Ford, Bacon & Davis. L. F. Terry of New York and J. R. Bahan of Shreveport will represent Davis.

Two compressor stations are now under construction, one at Guthrie and the other north of Greenville, and plans call for the construction of two others.

CENTRAL STATES COMPANY BUYS THERMAL INTERESTS

The Thermal Oil & Gas Company of Oklahoma has sold its gas interests to the Central States Power and Light Company of Chicago, according to newspaper reports. Gas properties with production of approximately 40,000,000 cu. ft., and pipe lines in West Tulsa, Oilton and Cleveland districts, are included. The deal involved approximately $500,000 and was made by the Utilities Power and Light Company, a subsidiary of the Central States Company. Two other Oklahoma operators, E. G. Mullendore, Cleveland, and R. C. Jones, Cushing, are reported to have negotiated the sale of their gas properties and franchises at Stillwater and Pawnee, to the same purchaser.

DEATH OF OWEN MANNING REGRETTED BY MANY FRIENDS

According to word from the Houston Pipe Line Company, of Houston, Texas, Owen Manning, a pipe liner of the old school, died late in September while waiting for a train in the Southern Pacific Station in that city.

Mr. Manning was widely known in the industry, having been employed continuously in field or transportation work in the fields of New York, Pennsylvania, and, more recently, Wyoming and Texas. His passing is deeply regretted by a host of friends.

V. M. CONE TO ENTER GOVT. FLOOD CONTROL SERVICE

V. M. Cone, gas and electric engineer of the Oklahoma Corporation Commission for the last two years, has resigned to enter government flood control service. It is understood that his work will be in connection with the Arkansas river and its tributaries. No announcement has been made as to appointment of a successor.

COUNCIL GROVE, KANSAS, NOW SUPPLIED WITH GAS

Gas was turned into the city mains of Council Grove, Kansas, late in August through the C. A. Nicoll gas line from a well west of Council Grove. Mr. Nicoll owns the city franchise and has posted $5,000 as a guarantee that gas would be brought to the city by September 1st.

Motor Tires Inc

When You Buy....

WHEN you buy a machine to perform a certain kind of work, you look for well-defined characteristics that will enable it to do that work economically.

Your truck tire purchases should be considered in the same light. A truck tire is, in reality, a machine built to meet specific hauling conditions.

True . . . in physical appearance, in size, in materials, many makes seem almost identical, frequently prompting the remark, "all standard makes are about the same."

But . . . when you purchase other machines, you do not say that! You recognize in them certain characteristics that distinguish one from another. You will find similar, well-defined characteristics in Goodyear Truck Tires that make them outstanding as machines that will do a better job than other makes.

Here at Motor Tires, Inc., we carry various types of Goodyear Truck Tires —each one a machine having certain characteristics that set it apart, and which recommend it as best for use in certain types of hauling.

Do you know which type tire your hauling conditions require to operate most economically? If not . . . call on Motor Tires, Inc., or telephone! You'll get the information you want—immediately.

TUNE in ON OUR MUSICAL PROGRAMS over RADIO KFON

"A Tire for Every Need"

Motor Tires, Inc.

LOS ANGELES
1244 E. 8th St.
TR-6565

SANTA MONICA
1529 Wilshire Blvd.
28386

LOS ANGELES
1228 S. Grand
WE-3554 & 5710

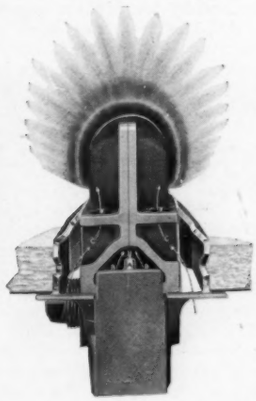
HOLLYWOOD
6523 Santa Monica Blvd.
HO-5524

LONG BEACH—220 E. Anaheim—62279

FORMERLY

TRUCK TIRE SERVICE CO. . . ZINS & CLAWSON SERVICE CO.

R • M • C



The gas burner with a snappy, high temperature flame

Rotary Manufacturing Co.

5720 Long Beach Avenue
LOS ANGELES

YES . . . 47 YEARS IS A LONG TIME TO KEEP A PROMISE. YET, 47 YEARS AGO WE DECIDED THAT ONLY THE FINEST RAW MATERIALS, THOROUGH INSPECTION AND ACCURATE MANUFACTURING WOULD ENTER INTO ARCO PAINT AND PROTECTIVE PRODUCTS. THIS PLEDGE TO OURSELVES . . . AND TO THOSE WHOM WE SERVE . . . HAS NEVER BEEN BROKEN, AND NEVER WILL.

THE ARCO COMPANY
CLEVELAND, OHIO

Pacific Coast Branch
116 New Montgomery St.
San Francisco, Calif.

Branches and Warehouses in Principal Cities

(198)

ARCO

Paints . Varnishes . Enamels . Lacquers

NATURAL GAS GASOLINE OPERATIONS

Compiled by E. T. Knudsen
Department of Commerce, Bureau of Mines, Division of Mineral Resources and Statistics

ONE hundred and thirty-six natural gasoline plants with a daily indicated capacity of 1,624,800 thousand cubic feet, report a recovery of 48,723,100 gallons of natural gasoline from 32,559,392 thousand cubic feet of gas treated in August. This is an increase of 230 barrels in daily average production.

Utilization of natural gasoline amounted to 1,149,624 barrels, an increase over July of 118,126 barrels. Daily average utilization of 37,085 barrels was 337 barrels less than daily average prdouction of 37,422 barrels.

Stocks of natural gasoline at the end of August amounted to $1,209,890 barrels, of which 31,342 barrels were reported by natural gasoline plant operators and 1,178,548 barrels by refinery operators. This is an increase of 194,620 barrels over July stocks. This stock figure of 1,209,890 barrels is approximately thirty-two and one-half days supply at the current rate of consumption.

Production of gasoline during the month of August amounted to 5,874,631 barrels, a daily average of 189,504 barrels. This is an increase in total production of 227,372 barrels or 4.03 per cent over July output, and an increase of 923,870 barrels or 18.66 per cent over the output of August, 1927.

Of the total gasoline produced, 25,536 were reported as finished gasoline produced by natural gasoline plant operators. Production of gasoline from cracking processes decreased in August to 472,404 barrels.

Stocks of gasoline show a decrease of 1,405,783 barrels during August and at the end of the month amounted to 9,402,586 barrels.

CALIFORNIA NATURAL GASOLINE PRODUCTION, DISTRIBUTION
AUGUST, 1928

PRODUCTION *Type of Plant*	*Gas Treated M. C. F.*	*Natural Gasoline Produced (Gallons)*	*Gasoline Recovery per MCF Gas Treated*
Oil Absorption	23,461,861	32,794,224	1.398
Compressor	246,919	297,071	1.203
Combination Comp. and Oil Absorption	8,850,612	15,625,836	1.766
Drip	.....	5,969	.....
Totals	32,559,392	48,723,100	1.496

Finished Gasoline produced at plants, 25,536 barrels.

DISTRIBUTION			
Stocks first of month			1,015,270 Bbls.
Production during month			1,160,074 Bbls.
Quantity mixed with crude or unfinished oils	148,133 Bbls.		
Used in blending at refineries	990,582 Bbls.		
Stocks end of month	1,209,890 Bbls.		
Used at plants, shortage and evaporation losses	10,909 Bbls.		
Balance	.....		184,170 Bbls.
STOCKS	2,359,514 Bbls.		2,359,514 Bbls.
Natural Gasoline held by Natural Gasoline Plant Operators	1,316,360 Gals.	or	31,342 Bbls.
Natural Gasoline held by Refiners	49,499,016 Gals.	or	1,178,890 Bbls.
Totals	50,815,376 Gals.	or	1,209,890 Bbls.

Finished Gasoline (Motor Fuel) held by Natural Gasoline Plant Operators.....None

35th P. C. G. A. Convention Sessions

(Continued from Page 25)

BELIEVING that these large annual investments in money by the industry and the members of this Association should be capitalized to the highest degree, and

BELIEVING that these conventions present an unparalleled opportunity for the transfusion of the inspiration and personal leadership of those men who through their vision and personal magnetism have achieved the highest leadership among the member companies of the Association,

NOW THEREFORE, BE IT RESOLVED that the 35th convention of the Pacific Coast Gas Association craves an even greater personal interest and support of its conventions by the highest executives of the entire industry, and urges upon them the importance of personal attendance at its meetings and participation in its discussion, even at considerable sacrifice of other important obligations—not so much with the hope that they will take away information helpful to themselves, but rather that we, the rank and file of the industry, may have the benefit of their inspiration and leadership, which can be gained only through personal contact.

Space limitations demand that the meetings of the four sessions be treated but briefly, and only features which did not appear in *Western Gas* for September will be given mention in this account.

Two sessions of the Accounting Section were held, with General Chairman W. E. Robbins of the Southern California Gas Company presiding. All of the program features of this section were published in last month's issue. Discussions following presentation of the various papers in all sections and general sessions will appear in the Association Proceedings.

The Commercial Section held three sessions, C. R. Miller of the Portland Gas and Coke Company, wielding the gavel as general chairman. An excellent report by J. Earl Jones on "What the Architect Wants," presenting a suggested gas manual for the architect, was given at the second session, as

was also a report on domestic sales by L. J. Brundige. Both of these reports received honorable mention from the convention awards committee.

In his paper "Cleanliness—the Multiplier of Sales for Gas Heated Hot Water" Charles A. Meyer, president of the Los Angeles Soap Company, described the co-operative work of the Cleanliness Institute, set up by leading soap manufacturers of the nation to carry on a campaign of education for cleanliness. His paper, which stresses possible tie-in with gas company sales and advertising work, was given at the Commercial Section meeting of Wednesday. It will be published in an early issue of *Western Gas*.

L. F. Galbraith, chairman of the advisory rate committee, submitted a report entitled "A Recognition of the New Competition" at the Wednesday session, and a report on radio broadcasting was also offered by the committee of which H. E. Davidson is chairman.

Capt. A. E. Higgins, field representative of the American Gas Association, brought the national body's greetings and a word of sales inspiration in his message "Blue Star Progress," given at the Commercial Section's third session.

Tuesday afternoon's session of the commercial group was enlivened by a playlet, "The Big Idea," written by A. L. Walker and played by the author, A. L. Wulbern, Carl C. Mack—all North Bay Division employees of the P. G. and E., Al Rice of H. R. Basford Company, and Hazel Minor of the San Diego Consolidated.

Four sessions were required for the Technical Section's comprehensive program, over which General Chairman H. L. Masser of the Los Angeles Gas and Electric Corporation presided. With the exception of three, all Technical Section features have had publication in the September *Western Gas*. A paper on "Underground Storage of Natural Gas," collaborated in by A. F. Bridge and H. P. George, and read by the latter at the Wednesday morning session, appears in the present issue. The report of the materials and methods committee, of which Otto Goldkamp is chairman, and the symposium on operation, conducted this year by J. E. Kelley, are the remaining features not previously published. They together made up the Thursday morning program of the section, and brought out a general exchange of information on materials and practices throughout the Association territory.

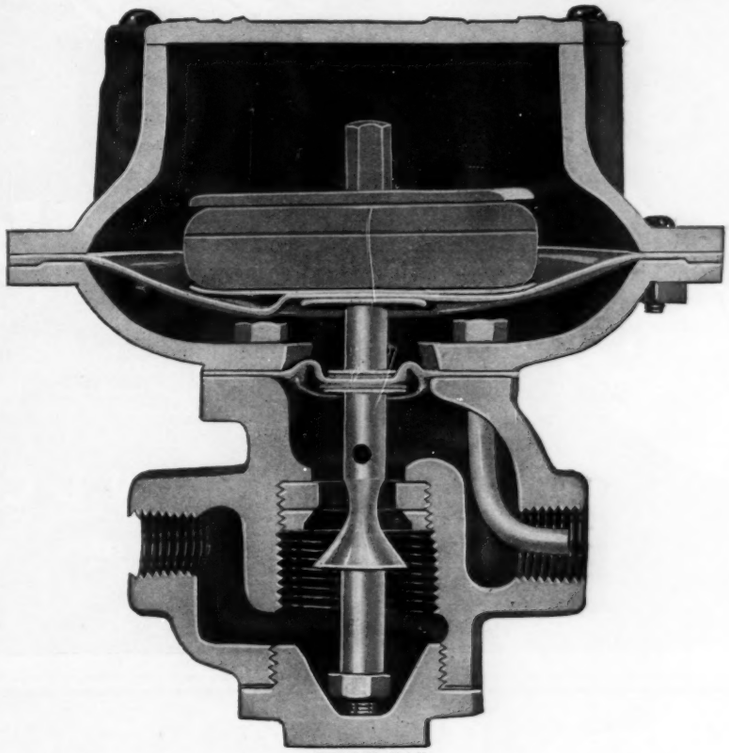
Under the work of the Public Relations Section, of which D. L. Scott, Los Angeles Gas and Electric Corporation, is general chairman, came a number of convention treats about which pages could be written. We must be brief, and therefore the story will be limited largely to results of the contests sponsored by the section.

THREE MINUTE SPEAKING

At the luncheons of Tuesday and Thursday, and at the annual banquet Thursday evening, the three-minute speaking was a general attraction, and brought credit to the participants as well as enjoyment to the listeners. It should be said by way of preface that these contests derived no small share of their value from the elimination contests they inspired in member companies to determine who should come to Coronado to participate in the speaking bouts. For example, the Portland Gas and Coke Company eliminations brought out 105 contestants, all of whom naturally derived benefit from their work.

"Gas, the Aristocrat of Fuels," was the Tuesday subject, and George M. Sadler of

Reliance Low Pressure or Appliance Regulator



TYPE "A"

This type of regulator is designed for use directly on a gas supply to the appliance or for governing entire house supply up to the limits of inlet pressure and capacity.

Remarkable for its ability to maintain pressures under great demand. Capacity 50% to 100% greater than any other regulator on the market.

Built in sizes 3/8", 1/2", 3/4", and 1".

Reliance Manufacturing Company

ALHAMBRA, CALIFORNIA

Mettler Entrained Combustion Gas Burners

FOR ALL Purposes Kinds of gas Pressures

406 S. Main St. LEE B. METTLER, CO. Los Angeles, Cal.

FIRE BRICK
LININGS, CHECKERS and BOILER SETTINGS are carried in stock for quick shipment. If special or hand-made shapes are required, our plant is especially equipped to make them.
GLADDING, Mc BEAN & CO.
SAN FRANCISCO
LOS ANGELES
PORTLAND
SEATTLE
421

Stauffer's

FERROX

Purifier

meets these essential requirements of a good Gas Purifier

A highly active Iron precipitate, with a high Iron content.
A thoroughly impregnated and porous bulky mass, ready to use, no delay, always uniform.

A dependable source of supply

Pioneer manufacturers of Industrial Chemicals on the Pacific Coast

Stauffer Chemical Company

624-638 California Street, San Francisco, California

the Los Angeles Gas and Electric Corporation came off winner in the field of six entries, his reward being an eight-day mantle clock presented by A. F. Hockenbeamer, president of the Pacific Gas and Electric Company. R. A. Watts, San Diego Consolidated Gas and Electric Company, spoke to a good second place and drew a 1-A kodak given by the the P.C.G.A. I. D. Conrad of the Pacific Gas and Electric Company took third place.

Thursday noon the topic up for oratory was "Gas Range and Water Heater, the Genii of the Kitchen," with M. A. Seeley, also of the L. A. G. and E., as winner of the traveling case which came as first prize; C. B. Babcock was the donner. Ray Trowbridge was the recipient of the P.C.G.A. gift, another 1-A Kodak rewarding second place.

The two preliminary bout winners spoke it out Thursday night on the theme "What Can the Gas Company Do to Still Further Popularize Gas Service?" G. M. Sadler proved the more facile of tongue on this occasion, and took home a full jewel wrist watch, the gift of Hill, Hubble & Company.

STUNTS NIGHT

Another Public Relations Section offering was the Stunts Night which has become entrenched as a feature of P.C.G.A. conventions since its first appearance on the program last year at Santa Cruz. Four companies turned out a playlet, after various inter-company contests, to compete Wednesday evening on the general theme of the desirability of gas as a home fuel. "Home Sweet Home," written by William Fisher and enacted by himself, Mrs. Dorothy Stinson and Mrs. Marguerite Kerlin, all employees of the Los Angeles Gas and Electric Corporation, got the judges' verdict. "The Tip," representing the Southern Counties Gas Company, and "Gassed in the End," the San Diego Consolidated's entry, were neck and neck for second, with the Southern Counties holding the edge in the last count. Hayes Keiser wrote "The Tip" and Lorraine Powell and Hugh Mildern helped him play it. Ray Edwards wrote San Diego's contribution, which was enacted by Harold Moody, Edith Laing, Verna Schneider, Charles Polzer, Tom Hartigan, and the author.

The P. G. and E. was represented by "A Salesman's Dream," written by A. L. Walker, who was supported in the cast by Carl Mak, H. G. Wulbern, A. L. Walker and A. G. Miller.

A. B. Day, president of the L. A. G. and E. had the pleasure, as donner of the Stunts Night Trophy, of awarding it this year for the second time to his own employees.

All in all, the three-minute contests and Stunts Night are indispensable to the spirit of the convention, and this year they went over in fine style.

Thursday morning the Public Relations Section met in business session to listen to two papers—on "Public Relations Through Service," by Ralph J. Phillips, and "Public Relations Through Executive Policies," by J. F. Pollard—and two reports, one by George L. Myers, chairman of the legislation and taxation committee, and the other by Ruth Creveling, chairman of the women's committee.

Convention entertainment is summed up in the statement that there never was a convention more enjoyed. For the ladies there were auto tours, boat rides, a luncheon visit to Agua Caliente, teas, bridge, putting contests on the Hotel del Coronado miniature golf course. Mrs. L. M. Klauber headed the ladies entertainment committee.

Dancing every evening, either in the ballroom or the Casino of the Coronado was

enjoyed by everyone, and some exceedingly good musical and dance talent was introduced on two evening programs by the entertainment committee, of which Ray C. Cavell served as capable head.

THE BANQUET

The banquet Thursday evening was a triumph for the chef, as well as another milestone in Association goodfellowship. Wm. de Waard as chairman of the banquet committee deserves thanks for the smoothness with which the many guests were accommodated. Amplifiers made it possible for everyone to hear the speakers, speeches were brief, and altogether there were no grounds for complaint.

At the banquet President Klauber, introducing the new Association head, President Dickey, presented him with the Association pin designating his office; in return he received from President Dickey a pin signalizing his service to the Association in the year just closed.

O. L. Moore prefaced the report of the awards committee with an explanation of a change in the award system. Whereas gold medals had formerly been awarded for papers only, this honor was made available this year as a committee award on the same requirements. One of the Association's coveted gold medals of distinction was awarded for the report of the undistributed construction costs committee, of which R. A. Hornby was chairman. There were no gold medal papers. Two Commercial Section reports, by J. Earl Jones (What the Architect Wants), and L. J. Brundige (Domestic Sales), received honorable mention. Honorable mention also went to the Technical Section committees headed by Ted Rosebaugh (Design of Scrubbing Systems), H. M. Barnes (Internal Corrosion, Dust Control, and Dehydration), and D. H. Perkins (Meters and Regulators).

To the Commercial Section went the Basford Trophy, given to the section contributing most of the advancement of the industry in the Association year. C. R. Miller accepted the plaque in the name of his section.

CONVENTION GOLF

Awards honoring a different kind of talent were given at the banquet by W. M. Thompson, president of the Reliance Manufacturing Company and chairman of the P.C.G.A. golf committee. In the Association tournament, which was run off Tuesday and Wednesday, the following contenders won honors:

L. Cincq-Mars, low net, winner of the Babcock, Basford, Pedersen cup, taken last year by Clyde H. Potter.

Gus Hamilton, low gross with an 84.

J. Charles Jordan, whose 132 entitled him to undisputed possession of the booby prize.

Flight winners included A. E. Halloway, Van E. Britton, H. H. Watson, Walter I. Thrall and George H. Finley.

A splendid assortment of trophies, provided through the generosity of several Association Cass B members, provided the victors' spoils.

The subject of golf should not be dismissed without mention of the ladies' putting contest winner, Mrs. Frank H. Bivens, who received her prize (some feminine unmentionable or other) at the hands of W. M. Dickey during banquet proceedings.

THE SAFETY MEET

Convention safety contests, held this year for the second time, were the feature of Monday night. Five teams participated, representing the Pacific Gas and Electric Company, Los Angeles Gas and Electric Corpora-

Use
THE PIONEER SEPARATOR

For complete separation of liquids and solids from air, gas, steam or other vapors.

Diagrammatic top view

The **PIONEER SEPARATOR** separates completely, liquids from gases, by employing several thousand times the following primary methods: 1 Baffling; 2 Centrifugal force; 3 Sudden changes in the direction of travel; 4 Sudden changes of velocity.

PIONEER EQUIPMENT CORPORATION OF AMERICA

231 BROADWAY NEW YORK

Calif. Representative
H. PLUMMER
806 Fife Building
San Francisco, California

Fire Brick Contractors

Established 1906

J. T. Thorpe & Son
Inc.

Specializing in Gas Generator, Boiler, Still and Furnace Brick, Industrial Furnaces, Retorts, Kilns, Brick Smokestacks.

A capable Engineering Department competent to advise on any problem involving firebrick construction.

San Francisco	Seattle	Portland	Los Angeles
417 Market St.	939 Stewart Bldg.	609 Ry. Exch. Bldg.	321 W. 3d St.

HOT-N-KOLD

The Hot-N-Kold Shops are now serving the public in eight cities in the northern part of California with Kelvinator Refrigeration, Holbrook Ranges, Welsbach Water Heaters, and other major appliances.

A valuable business franchise awaits the right dealer in every town.

HOT-N-KOLD CORPORATION

949 Mission Street San Francisco, California

GILFILLAN
Dual Control Valve Regulators

Write for literature

SAVE ONE INSTALLATION

Maintain a constant steam pressure on the boiler
and
Reduce and maintain an unvarying gas pressure to the burner regardless of the variation in line pressure.

Built to control Boiler pressure from one pound to 200 pounds steam, and deliver as low as two ounces gas pressure at the burner.

GILFILLAN MACHINE WORKS, Inc.
Ebenezer, Erie Co., N. Y.

Representatives
Jensen Instrument Co., 624 E. Fourth St., Los Angeles, Calif.
Gas Appliance Service Corp, 2014 Bryan St., Dallas, Texas.
The Diamond Supply Co., Charleston, W. Va.

The Magic Way Company

Gas Heating Devices

including

"Magic Way" Gas Furnaces
"Magic Way" Control Valves and Switches
"Potter" Radiators
"Steel Made" Radiators
"Cole" Floor and Wall Heaters
"Hall" Floor Furnaces

Manufactured by

Magic Way Company
National City San Diego California

tion, San Diego Consolidated Gas and Electric Company, and Southern California Gas Company. The L. A. G. and E. entered both a men's and women's team, and its men's team got the decision in the judges' scoring of the three projects on which the competing teams worked.

The winning team was comprised of A. J. Norman (captain), George Code, G. F. Taylor, W. J. Kennedy, Harry W. Gove, and J. M. North (patient). To these men, representing the L. A. G. and E. gasworks, came individual $10 gold pieces from the P.C.G.A., bronze medals from the National Safety Council, the F. J. Schafer cup and a cup from the Society of Safety Engineers, both trophies permanent if won three times by the same team. A silver cup from the Association was given outright to the winners.

Second place went to the Southern California Gas Company, whose team members were Wallace McBride (captain), A. Abbott, Jimmie Hummel, Al Halpin, C. A. Condon and G. C. Mason (patient). Five dollars apiece in gold went to these members, as well as a permanent silver cup given by the P.C.G.A.

Silver compacts, given by the L. A. G. and E., went to the women's team, which participated very creditably in the contests.

Committees whose work was evident in the fact that the convention went off without a hitch include that on hotel accommodations, W. A. Lambert chairman; and that on transportation, W. E. Frazer chairman. The high attendance is undoubtedly due in part to the publicity committee, headed by Forrest Raymond, whose advance literature whetted the convention appetite until it was impossible to stay away.

"Balloon Juice"—the convention tell-tale and news purveyor—was very much to the fore with its two advance issues, its three convention "inflations" and the parting "So Long Folks" broadside. Mrs. R. E. Creveling, editor, and Ray Edwards, assistant editor, deserve due tribute.

For the first time the Convention had its own "movies," with daily changes and a continuous run. Les Kobler of the San Diego Consolidated had this innovation in charge.

Convention attendance set up something of a record, considering the far south location of the site. Following are details on company representation at Coronado:

Pacific Gas and Electric Company, 57; San Diego Consolidated Gas and Electric Company, 41; Southern Counties Gas Company, 28; Southern California Gas Company, 22; Los Angeles Gas and Electric Corporation, 22; Portland Gas and Coke Company, 15; Coast Counties Gas and Electric Company, 4; Central Arizona Light and Power Company, 3; Spokane Gas and Fuel Company, 2; Utah Gas and Coke Company, 1; Inland Empire Gas Company, 1; Pacific Power and Light Company, 1; Honolulu Gas Company, Ltd., 1; Brooklyn Union Gas Company, 1; Puget Sound Power and Light Company, 1; South West Gas and Fuel Company, 1; Santa Maria Gas Company, 1; Turlock Gas Company, 1; South Coast Gas Company, 1; Tucson Gas Electric Light and Power Company, 1; Modesto Gas Company, 1; Arizona Edison Company, 1; Sierra Pacific Power Company, 1; British Columbia Electric Power and Gas Company, 1. Total, 209.

CLASS "B" MEMBERS

James Graham Mfg. Company, 4; H. R. Bosford Company, 3; Mueller Company, 3; Pacific Meter Works, 3; Western Gas, 3; Paraffine Companies, 3; Reliance Manufacturing Company, 3; Graham Hambly and Son, 2; Lattimer Stevens Company, 2; Superbo Manufacturing Company, 2; Merco Nord-

DIRECTORY of the Industry

Gas

Generating Equipment
Wash Boxes
Scrubbers
Purifiers
Riveted or Welded

Boilers
Electric Elevators
Cranes and Hoists

BAKER IRON WORKS
Los Angeles
950 No. Broadway

Byllesby Engineering and Management Corporation
231 S. La Salle Street
CHICAGO
New York Pittsburgh San Francisco

SMITH-EMERY CO.
Chemists—Engineers
Established 1910
Analyses and tests. Represent Pittsburgh Testing Laboratory for inspection at Eastern foundries, mills and shops.
Offices & Laboratories
920 Santee St., Los Angeles
651 Howard St., San Francisco

J. B. GILL CORPORATION
NATURAL GAS ENGINEERS
COMPRESSOR PLANT DESIGN AND CONSTRUCTION
P. O. BOX 669 LONG BEACH, CALIFORNIA

THE FORT WORTH LABORATORIES
Instrument Department
Meriam Manometers *Tycos* Instruments
Laboratory Apparatus
828½ Monroe Street Fort Worth, Texas

CHAS. R. COLLINS
Management, Operation, Examinations, Appraisals Relating to Manufactured Gas
4424 White Building
SEATTLE, WASHINGTON

WHY NOT PATENT AND PROTECT YOUR INVENTIONS?
They may prove valuable.
I have made a specialty of Patent Office practice for the past fifteen years and can assure you of expert service and prompt attention to patent and trade-mark matters.
LESTER L. SARGENT
Registered Patent Lawyer
1115 K Street, N. W. Washington, D. C.

JENSEN INSTRUMENT CO.
Pyrometers—Recorders—Controllers
Draft Gages—CO_2 Instruments—Steam Traps
Thermometers—Chemical Glassware
Orifice Meters—Manometers
624 East 4th Street, Los Angeles, Calif.
950 Parker St., Sta. A. Berkeley, Calif.

strom Valve Company, 2; Hill Hubbell and Company, 2; Dearborn Chemical Company, 2; Johns Manville Company, 2; Estate Stove Company, 2; Pacific Gas Heating Company, 2; George M. Clark and Company, 2; L. R. Teeple Company, 2; Hot-N-Kold Corporation, 2; Arco Company, 2; California Servel Sales, Inc., 2; Ingersoll Rand Company, 2; Tappan Stove Company, 2; Welsbach Company, 2; Westcott & Greis, Inc., 2; C. B. Babcock Company, 1; E. A. Key Company, 1; National Refrigerating Company, 1; Pacific Manifolding Book Company, 1; Vitrifrax Corporation, 1; Pacific Pipe and Supply Company, 1; Pacific Clay Products Company, 1; John Wood Manufacturing Company, 1; Electric Furnace Company, 1; General Electric Company, 1; Grinnell Company, 1; Pittsburg Equitable Meter Company, 1; Westinghouse Electric Manufacturing Company, 1; Hoyt Heater Company, 1; American Radiator Company, 1; Sprague Meter Company, 1; University of California, 1; Northwest Gas and Electric Equipment Company, 1; Ward Heater Company, 1; Jas. A. Knopp Company, 1; Cahill Company, 1; U. S. Cast Iron Pipe and Foundry Company, 1; Bryant Heater and Manufacturing Company, 1; Victor Oxy-Acetylene Equipment Company, 1; Lee B. Mettler Company, 1; A. B. Stove Company, 1; West Gas Imp. Co., 1; Worthington Company, 1; Ruud Heater Company, 1; Payne Furnace and Supply Company, 1; Steel Tank and Pipe Company, 1; George D. Roper Corp., 1; McEverlast Incorporated, 1; Western Pipe and Steel Company, 1; Steeger and Kerr Stove and Foundry Company, 1; P. H. & F. M. Roots Company, 1; Stockton Fire Brick Company, 1; Harbison Walker Refractories Company, 1; Wales-Dove-Hermiston Corporation, 1; Williams Radiator Company, 1. Total, 98.

RECAPITULATION

Gas Companies	209
Manufacturers	98
Ladies	82
Guests and Misc.	12
	401

W. P. HUTCHINSON APPOINTS MGR. FOR SPRAGUE METER

W. P. Hutchinson, vice-president and general manager of the Sprague Meter Company, was a visitor on the Coast during September, attending the Pacific Coast Gas Association Convention. While here Mr. Hutchinson appointed E. H. Roseberry as Southern California and Arizona manager, filling the place of the late E. W. Langdon. Mr. Roseberry was formerly associated with the Ingersoll-Rand Company at its Los Angeles Office.

PHILLIPS PETROLEUM WILL HAVE NEW GASOLINE PLANT

Phillips Petroleum Company has started construction of a natural gasoline plant which will produce 75,000 gallons of gasoline per day, near McCamey in Upton County, Texas. The plant is expected to be put in operation in December. It is being especially constructed to handle gas in that area, which has a high content of hydrogen sulphide.

A WESTERN GUIDE to INDUSTRIAL PURCHASING

Readers interested in any articles not listed in these pages are cordially invited to advise *Western Gas* of their wants and every effort will be made to furnish a list of the proper manufacturers. Addresses of companies listed on these pages may be found by consulting their advertisements in this issue.

Absorption and Compression Plant Equipment
Baker Iron Works.
Chaplin-Fulton Mfg. Co.
Jensen Instrument Co.
The E. A. Key Company
Western Pipe & Steel Co.

Absorption Towers
Baker Iron Works.
Western Pipe & Steel Co.

Adjustable Plugs
Lattimer-Stevens Co.
Western Pipe & Steel Co.

Agitators
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Aluminum Bronze Powder for Paint
W. P. Fuller & Co.
Hill, Hubbell & Co.

Analyzers
Fort Worth Laboratories.
Smith-Emery Co.

Apparatus, Experimental Gas
The Bartlett Hayward Co.
Pacific Meter Works.

Appraisals and Valuations
Charles R. Collins.
Smith-Emery Co.
United Engineers & Constructors, Inc.

Automobile Tires
Motor Tires, Inc.

Bags, Gas Main
C. B. Babcock Co.
Mueller Co.
Safety Gas Main Stopper Co.

Barometers
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
Westcott & Greis, Inc.

Bench Iron Work
The Bartlett Hayward Co.
General Gas Light Co.

Blocks and Tiles, Fire Clay
Gladding, McBean & Co.
Stockton Fire Brick Co.

Blowers and Boosters
Ingersoll-Rand Co.
Connersville Blower Co.
The P. H. & F. M. Roots Co.
United Engineers & Constructors, Inc.

Boiler Controls
The Cleveland Heater Co.
Gilfillan Machine Works, Inc.

Boiler—Brickwork
J. T. Thorpe & Son, Inc.

Boiler Equipment
E. A. Key Co.

Boiler Maker's Tools
E. A. Key Co.

Boilers, Gas-Fired
C. B. Babcock Co.
Baker Iron Works.
Leahy Mfg. Co.

Boiler Settings, Pipe and Boiler Insulation
Pioneer Paper Company.
J. T. Thorpe & Son, Inc.

Boilers, Waste Heat
Baker Iron Works.
The Bartlett Hayward Co.
Phillips Heating, Ventilating & Mfg. Co.
United Engineers & Constructors, Inc.

Boilers, Water Tube
Baker Iron Works.
Western Pipe & Steel Co.

Breakers
Ingersoll-Rand Co.

Breeching (Boiler and Stack)
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Brick, Firebrick
Gladding, McBean & Co.
Stockton Fire Brick Co.
United Engineers & Constructors, Inc.

Brick, Firebrick—Installation
J. T. Thorpe & Son, Inc.

Brushes, Wire Pneumatic
Ingersoll-Rand Co.

Buildings, Steel
Baker Iron Works.
United Engineers & Constructors, Inc.
Western Pipe & Steel Co.

Bunkers, Steel and Concrete
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Burners, High Pressure
Leahy Mfg. Co.
Lee B. Mettler.
Rotary Manufacturing Co.

Burners, Low Pressure
C. B. Babcock Co.
The Bartlett Hayward Co.
Western Pipe & Steel Co.
General Gas Light Co.
Johnson Gas Appliance Co.
Leahy Mfg. Co.
Lee B. Mettler.
Pacific Gas Radiator Co.
Payne Furnace & Supply Co.
Phillips Heating, Ventilating & Mfg. Co.
Rotary Manufacturing Co.

Burners—Oil
Leahy Mfg. Co.
Rotary Manufacturing Co.

By-Product Recovery Apparatus
The Bartlett Hayward Co.

Calorimeter Accessories
Fort Worth Laboratories.
Pacific Meter Works.
United Engineers & Constructors, Inc.

Cases, Meter
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Casinghead, Gas Meters
The Bristol Company
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.

Casing and Tubing (steel)
South Chester Tube Co.

Casing—Iron
South Chester Tube Company

Cast Iron Pipe
McWane Cast Iron Pipe Co.
United States Cast Iron Pipe and Foundry Co.

Castings
The Bartlett Hayward Co.
United States Cast Iron Pipe and Foundry Co.

Cement
Stockton Fire Brick Co.

Cement, High Temperature
Stockton Fire Brick Co.

Centrifugal Pipe
United States Cast Iron Pipe and Foundry Co.

Charging Machines (retort, etc.)
The Bartlett Hayward Co.

Checker Brick
Gladding, McBean & Co.
Stockton Fire Brick Co.

Chemical and Gas Testing Apparatus
Fort Worth Laboratories.
Pacific Meter Works.
Stauffer Chemical Co.
United Engineers & Constructors, Inc.
Westcott & Greis, Inc.

Chemists, Analytical
Fort Worth Laboratories.
Smith-Emery Co.

Chimneys, Radial Brick
Gladding, McBean & Co.
Stockton Fire Brick Co.

Chimneys, Radial Brick Installation
J. T. Thorpe & Son, Inc.

Chutes (coal, coke, ash)
The Bartlett Hayward Co.
United States Cast Iron Pipe and Foundry Co.

Clamps and Sleeves, Pipe
S. R. Dresser Mfg. Co.
Mueller Co.

Clamps, Service
Mueller Co.

Cleaners, Service
C. B. Babcock Co.
Pacific Meter Works.

Coal Gas Plants
Charles R. Collins.
The Bartlett Hayward Co.

Coal Tar Products and Chemicals
W. P. Fuller & Co.

Cocks
C. B. Babcock Co.
Johnson Gas Appliance Co.
Lattimer-Stevens Co.
Leahy Mfg. Co.
Merco Nordstrom Valve Co.
Mueller Co.
Geo. D. Roper Corporation.

Collectors, Dust
Western Pipe & Steel Co.

Compressors, Air
Ingersoll-Rand Co.
Leahy Mfg. Co.

Compressors, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, High Pressure
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, Portable
Ingersoll-Rand Co.

Condensers
Baker Iron Works.
The Bartlett Hayward Co.
Ingersoll-Rand Co.

Condenser Boxes
Baker Iron Works.

Controllers
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
The Foxboro Co., Inc.
Robertshaw Thermostat Co.

Controls, Air and Steam
The Bartlett Hayward Co.
The Bristol Company
The Foxboro Co., Inc.
Jensen Instrument Co.

Cooling Systems
The Bartlett Hayward Co.

Cooling Towers
J. B. Gill Corporation.

Counters, Revolution
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.

Couplings
S. R. Dresser Mfg. Co.
The Bartlett Hayward Co.

Couplings—Flexible Rope & Spider Arm
The P. H. & F. M. Roots Co.

Coverings (Tank, Boiler, Cold and Steam Pipe)
Pioneer Paper Company.

Cubic Foot Bottle
Pacific Meter Works.

Cutters, Pavement
Ingersoll-Rand Co.

Cylinders, Compressors
The C. & G. Cooper Co.

Dephlegmaters
Western Pipe & Steel Co.

Diaphragms, Meter
Chaplin-Fulton Mfg. Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Diggers, Clay
Ingersoll-Rand Co.

Discharging Machines (retort, etc.)
The Bartlett Hayward Co.

Door, Clean-out
Baker Iron Works.

Drills
Ingersoll-Rand Co.
Mueller Co.

Drill Pipe—Iron
South Chester Tube Company

Drill Pipe—Steel
South Chester Tube Company

Elevators
Baker Iron Works.

Engineers and Engineering Service
Charles R. Collins.
J. B. Gill Corporation.
The Bartlett Hayward Co.
Smith-Emery Co.
United Engineers & Constructors, Inc.
Western Pipe & Steel Co.

Engines, Diesel
The C. & G. Cooper Co.

Engines, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.
United Engineers & Constructors, Inc.

Engines, Oil
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Engines, Steam
Ingersoll-Rand Co.

Evaporating Apparatus
The Bartlett Hayward Co.
United States Cast Iron Pipe and Foundry Co.

Excavators, Ditch and Trench
The Cleveland Trencher Co.

Exchangers, Heat
Baker Iron Works.
Western Pipe & Steel Co.

Exhausters
Connersville Blower Co.
Ingersoll-Rand Co.
United Engineers & Constructors, Inc.
United States Cast Iron Pipe and Foundry Co.
The P. H. & F. M. Roots Co.

Experimental Apparatus
The Bartlett Hayward Co.
Pacific Meter Works.

Filters
United States Cast Iron Pipe and Foundry Co.

Fire Clay and Products
Gladding, McBean & Co.
Stockton Fire Brick Co.

Fire Brick Contractors
J. T. Thorpe & Son, Inc.
Stockton Fire Brick Co.

Fittings
The Bartlett Hayward Co.
McWane Cast Iron Pipe Co.
United States Cast Iron Pipe and Foundry Co.

Fixtures, Lighting (Domes, Portables, etc.)
C. B. Babcock Co.
Welsbach Company.

Fire Brick
Gladding, McBean & Co.
Stockton Fire Brick Co.

Flanges
Pittsburgh Equitable Meter Co
Westcott & Greis, Inc.

Forgings
Baker Iron Works.
Payne Furnace & Supply Co.
Geo. D. Roper Corporation.
J. T. Thorpe & Son, Inc.

Furnaces, Floor
Electrogas Furnace Co.
Magic Way Company
Pacific Gas Radiator Co.
Payne Furnace & Supply Co.

Furnaces, Heating
The Estate Stove Co.
Payne Furnace & Supply Co.
Magic Way Company.
Pacific Gas Radiator Co.
Phillips Heating, Ventilating & Mfg. Co.

Furnaces, Industrial
C. B. Babcock Co.
Johnson Gas Appliance Co.
Leahy Mfg. Co.
Mueller Co.
Payne Furnace & Supply Co.

Gas Analysis Apparatus
The Foxboro Co., Inc.
Fort Worth Laboratories.
Jensen Instrument Co.
Pacific Meter Works.
United Engineers & Constructors, Inc.

Gas Masks
Safety Gas Main Stopper Co.

Gas Main Tapping & Drilling Machines
Mueller Co.

Gaskets
The E. A. Key Company
Pittsburgh Equitable Meter Co
Safety Gas Main Stopper Co.
Southwestern Pipe Joint and Engineering Co.

Gasket Compound
W. P. Fuller & Co.
E. A. Key Co.

Gas Pipe Line Construction
Western Pipe & Steel Co.

Gates—Wind & Blast
The P. H. & F. M. Roots Co.

Gauges
The Bristol Company
Fort Worth Laboratories.
The Foxboro Co., Inc.
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Westcott & Gries, Inc.

Gauges, Steam
The Bristol Company
Jensen Instrument Co.
The Foxboro Co., Inc.
Westcott & Gries, Inc.

Gauges, U Type
C. B. Babcock Co.
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
Lee B. Mettler.
Pacific Meter Works.
Safety Gas Main Stopper Co.
The Foxboro Co., Inc.
Westcott & Gries, Inc.

Generators, Water Gas
The Bartlett Hayward Co.
Baker Iron Works.

Glassware
Fort Worth Laboratories.
Westcott & Gries, Inc.

Governors
C. B. Babcock Co.
Chaplin-Fulton Mfg. Co.
Pacific Meter Works.
Reynolds Gas Regulator Co.
Sprague Meter Co.
Westcott & Greis, Inc.

Hammers
Ingersoll-Rand Co.

Hanger, Meter
Mueller Co.

Hangers, Iron and Steel
Baker Iron Works.

Heaters
C. B. Babcock Co.
Baker Iron Works.
The Estate Stove Co.
General Gas Light Co.
Magic Way Company.
Payne Furnace & Supply Co.
Phillips Heating, Ventilating & Mfg. Co.
Welsbach Company.

Heaters, Floor
General Gas Light Co.
Magic Way Company.
Pacific Gas Radiator Co.
Payne Furnace & Supply Co.

Heaters, Wall
C. B. Babcock Co.
General Gas Light Co.
Magic Way Company.
Pacific Gas Radiator Co.
Payne Furnace & Supply Co.

Heat Exchangers
Baker Iron Works
Western Pipe & Steel Co.

Heat Interchangers
Western Pipe & Steel Co.

Hoists
Ingersoll-Rand Co.

Sprague Meters

Represent
Twenty-five Years of
Progress

We Are Proud of
Our Service to
the West

Sprague Meter Co.

BRIDGEPORT, CONNECTICUT
Los Angeles, California Davenport, Iowa
Houston, Texas San Francisco, California

See Our Exhibit at Tulsa

The New Model 11-M *Moisture-Proof* Bristol's Recording Pressure Gauge

THIS newly designed Recording Gauge incorporates many attractive features which should prove of interest to users of Bristol's Recording Instrument Equipment throughout the Refinery and Natural Gas Industries. Several of the more important items are:

1. **Moisture-proof case construction — which permits use of this type of instrument at points where exposure to moisture is unavoidable, either in the plant or out-of-doors on exposed oil or gas pipe lines, etc., etc.**
2. **Aluminum case—(not a zinc casting).**
3. **Has the original Bristol's Form Case construction, which is ideal for most efficient mounting of operating mechanism.**
4. **Inverted penarm is standard equipment.**
5. **Chart dial, pen-lifter and hub-cap are specially designed to facilitate easy removal of charts without smearing the ink record.**
6. **Easy access to clock for winding, regulating, stopping or starting by simply removing chart.**
7. **Clock parts are cadmium plated to resist action of moisture.**

Characteristic "Bristol's" features of simplicity and ruggedness are perfected to a high degree in this new model. In fact, from the standpoint of service, accuracy, and all-round reliability, it leaves little to be desired.

Note: The Bristol's exhibit will be shown at the Petroleum Show in Tulsa, Okla., on Oct. 20-29, at Booth Nos. 1 and 2.

The Bristol Company

WATERBURY CONNECTICUT

Branch Offices

Boston New York Philadelphia Pittsburgh Detroit
Birmingham Chicago St. Louis Denver San Francisco

Holders
The Bartlett Hayward Co.
Baker Iron Works.
United Engineers & Constructors, Inc.

Holders, High Pressure
Baker Iron Works.
Western Pipe & Steel Co.

Hoppers
The Bartlett Hayward Co.

Hose, Air
Ingersoll-Rand Co.

Hot Plates
C. B. Babcock Co.
Johnson Gas Appliance Co.
Geo. D. Roper Corporation.

Hygrometers
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Incinerators
C. B. Babcock Co.
Baker Iron Works.
J. T. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Incinerator Brickwork
J. T. Thorpe & Son, Inc.

Indicators
United Engineers & Constructors, Inc.
Westcott & Greis, Inc.

Instruments (Measuring, Testing and Recording)
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
Pacific Meter Works.
The Foxboro Co., Inc.
United Engineers & Constructors, Inc.
Westcott & Gries, Inc.

Insulating Materials
W. P. Fuller & Co.
Pioneer Paper Company.
Stockton Fire Brick Co.

Joint Runners Asbestos
Safety Gas Main Stopper Co.
United Engineers & Constructors, Inc.

Kilns
J. T. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Kilns—Brickwork
The Bartlett Hayward Co.

Laboratory Supplies
Fort Worth Laboratories.
Mueller Co.
Westcott & Greis, Inc.

Ladles, Hot Metal
Mueller Co.

Lamps
C. B. Babcock Co.
General Gas Light Co.
Welsbach Company.

Lighters
C. B. Babcock Co.
Tappan Stove Co.

Lighting Incidentals
C. B. Babcock Co.
Welsbach Company.

Line Pipe—Iron
South Chester Tube Company

Line Pipe—Steel
A. O. Smith Corporation
South Chester Tube Company

Linings—Brickwork
J. T. Thorpe & Son, Inc.

Linings—Car
Pioneer Paper Company.

Main, Bags
C. B. Babcock Co.
Mueller Co.
Safety Gas Main Stopper Co.

Mains, Street
United Engineers & Constructors, Inc.
United States Cast Iron Pipe and Foundry Co.

Main, Stopper
C. B. Babcock Co.
Mueller Co.
Safety Gas Main Stopper Co.

Mantles, Gas Lighting
C. B. Babcock Co.
General Gas Light Co.
Welsbach Company.

Manometers
Fort Worth Laboratories.
Jensen Instrument Co.
Lee B. Mettler.
Westcott & Greis, Inc.

Meters, Air
The Bristol Company
Connersville Blower Co.
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
The P. H. & F. M. Roots Co.
United Engineers & Constructors, Inc.
Westcott & Greis, Inc.

Meters, Boiler
The Bristol Company
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., inc.

Meters, Burner Test
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Cast Iron Gas
The Bartlett Hayward Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meter Connections
Lattimer-Stevens Co.
Pacific Meter Works
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Complaint
Pittsburgh Equitable Meter Co

Meters, Consumers
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Flow
The Foxboro Co., Inc.
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Westcott & Greis, inc.

Meters, Fluid
The Bristol Company
Jensen Instrument Co
Pittsburgh Equitable Meter Company
The Foxboro Co., Inc.
Westcott & Gries, Inc.

Meters, Gas
Connersville Blower Co
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
The P. H. & F. M. Roots Co.

Meters, Gasoline and Oil
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Westcott & Gries, Inc.

Meters, High Pressure Distribution
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Pacific Meter Works.
Sprague Meter Co.
The Foxboro Co., Inc.

Meters, High Pressure Iron Case
The E. A. Key Company
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Industrial Consumers
The Bristol Company
Connersville Blower Co.
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
The Foxboro Co., Inc
The P. H. & F. M. Roots Co.

Meters, Iron Case
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Laboratory
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Large Capacity
Connersville Blower Co.
Jensen Instrument Co.
Pacific Meter Works.
Sprague Meter Co.
The P. H. & F. M. Roots Co.
Westcott & Greis, Inc.

Meters, Oil
Connersville Blower Co.
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
The P. H. & F. M. Roots Co.
Westcott & Greis, Inc.

Meters, Orifice
Jensen Instrument Co.
Pacific Meter Works.
Robinson Orifice Fitting Co.
The Foxboro Co., Inc.
Robinson Orifice Fitting Co.
Westcott & Greis, Inc.

Meters, Oxygen
Fort Worth Laboratories.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Oxygen and Hydrogen
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Prepayment
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meter Seals
Lattimer-Stevens Co.

Meter Shelves
Lattimer-Stevens Co.

Meter Swivels and Caps
Lattimer-Stevens Co.

Meters, Station
Connersville Blower Co.
The Bartlett Hayward Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The P. H. & F. M. Roots Co.

Meters, Steam
The Bristol Company
Jensen Instrument Co.
The Foxboro Co., Inc.
United Engineers & Constructors, Inc.
Westcott & Greis, Inc.

Meters, Test
Fort Worth Laboratories
Pacific Meter Works.
Lattimer-Stevens Co.
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Water
Jensen Instrument Co.
Lattimer-Stevens Co.
Westcott & Greis, Inc.

Meters, Wet Test
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Mixers, Gas and Air
C. B. Babcock Co.
Geo. D. Roper Corporation.
Pacific Gas Radiator Co.

Oil, Diaphragm
Pacific Meter Works.

Over Heat Control
Robertshaw Thermostat Co.

Oxide
C. B. Babcock Co.
Stauffer Chemical Co.

Packing, Asbestos
Safety Gas Main Stopper Co.

Paint
The Arco Company.
Everlasting Paint & Sales Co.
W. P. Fuller & Co.
Pioneer Paper Company.
Hill, Hubbell & Company.
United Engineers & Constructors, Inc.

Photometers
Pacific Meter Works.
United Engineers & Constructors, Inc.

Pilots
The Cleveland Heater Co.
Payne Furnace & Supply Co.
Spencer Thermostat Co.

Pipe
A. O. Smith Corporation
McWane Cast Iron Pipe Co.
United States Cast Iron Pipe and Foundry Co.
Western Pipe & Steel Co.

Pipe Compound
E. A. Key Co.

Pipe, Copper
Mueller Co.

Pipe Covering
Hill, Hubbell & Company.
Pioneer Paper Company.

Pipe Couplings
S. R. Dresser Mfg. Co.

Pipe—Iron
South Chester Tube Company

Pipe—Steel
A. O. Smith Corporation
South Chester Tube Company

Pipe Coils, Bends, Van Stone Joints, Gasketless Flange Joints, Welded Nozzle Headers
Southwestern Pipe Joint and Engineering Co.

Pipe Jointers
Mueller Co.

Plugs (testing mains and running service)
C. B. Babcock Co.
Jensen Instrument Co.
The Foxboro Co., Inc.
Safety Gas Main Stopper Co.
United States Cast Iron Pipe and Foundry Co.

Pre-Heaters
Baker Iron Works.
Western Pipe & Steel Co.

Producers, Gas
United Engineers & Constructors, Inc.
United States Cast Iron Pipe and Foundry Co.

Provers, Meter
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Pumps
C. B. Babcock Co.
Connersville Blower Co.
Ingersoll-Rand Co.
Mueller Co.
Pacific Meter Works.
Geo. D. Roper Corporation.
Safety Gas Main Stopper Co.
The P. H. & F. M. Roots Co.

Pumps—Liquid
The P. H. & F. M. Roots Co.

Pumps—Vacuum
The P. H. & F. M. Roots Co.

Purifiers
Baker Iron Works.
The Bartlett Hayward Co.
United Engineers & Constructors, Inc.

Purifying Materials
C. B. Babcock Co.
Stauffer Chemical Co.
United Engineers & Constructors, Inc.

Purifiers, Oil Absorption
Western Pipe & Steel Co.

Pyrometers (Indicating and Recording)
The Bristol Company
Fort Worth Laboratories
Jensen Instrument Co.
Westcott & Greis, Inc.

Radiants
C. B. Babcock Co.
General Gas Light Co.

Radiant Heaters
C. B. Babcock Co.
General Gas Light Co.
Pacific Gas Radiator Co.
Welsbach Company.

Radiators—Gas Fired
Magic Way Company.
Pacific Gas Radiator Co.

Ranges
C. B. Babcock Co.
The Estate Stove Co.
Geo. D. Roper Corporation.
Tappan Stove Co.

Ranges, Closed Top
C. B. Babcock Co.
Geo. D. Roper Corp.
Tappan Stove Co.

Receivers, Air
Ingersoll-Rand Co.
Western Pipe & Steel Co.

Recorders
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Refrigerating Machinery
C. & G. Cooper Co.
Ingersoll-Rand Co.

Refractory Materials
Gladding, McBean & Co.
Stockton Fire Brick Co.
United Engineers & Constructors, Inc.

Regulators, Heat
C. B. Babcock Co.
Leahy Mfg. Co.
Magic Way Company.
Payne Furnace & Supply Co.
Phillips Heating, Ventilating & Mfg. Co.
The Foxboro Co., Inc.

Regulators, High Pressure
C. B. Babcock Co.
Leahy Mfg. Co.
The Bristol Company
Chaplin-Fulton Mfg. Co.
Fort Worth Laboratories.
Gilfillan Machine Works, Inc.
Reliance Mfg. Co.
Mueller Co.
Reynolds Gas Regulator Co.
Sprague Meter Co.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Regulators, Hot Water Heat Control
The Bristol Company
Mueller Co.

Regulators, Low Pressure
C. B. Babcock Co.
The Bristol Company
Chaplin-Fulton Mfg. Co.
Fort Worth Laboratories.
Gilfillan Machine Works, Inc.
Phillips Heating, Ventilating & Mfg. Co.
Reliance Mfg. Co.
Mueller Co.
Reynolds Gas Regulator Co.
Sprague Meter Co.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Regulators, Temperature
C. B. Babcock Co.
The Bristol Company
Fort Worth Laboratories
Jensen Instrument Co.
Leahy Mfg. Co.
Magic Way Company.
Payne Furnace & Supply Co.
Phillips Heating, Ventilating & Mfg. Co.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Regulators, Oven
C. B. Babcock Co.

Repairs—Brickwork
J. T. Thorpe & Son, Inc.

Retorts
The Bartlett Hayward Co.
United Engineers & Constructors, Inc.

Riveted Pipe
The Bartlett Hayward Co.

Rock Gas
Imperial Gas Co.

Roofing
The C. & G. Cooper Co.
Pioneer Paper Company.

Rotisserie
C. B. Babcock Co.
General Gas Light Co.

Rust Preventatives
Pioneer Paper Company.

Seals
Lattimer-Stevens Co.

Scrubbers
Baker Iron Works.
The Bartlett Hayward Co.
United Engineers & Constructors, Inc.
Western Pipe & Steel Co.

Settings, Boiler and Bench
J. T. Thorpe & Son, Inc.

Sheet Metal
Baker Iron Works.
Western Pipe & Steel Co.

Shingles
Pioneer Paper Company.

Sleeves
S. R. Dresser Mfg. Co.

Specials
The Bartlett Hayward Co.
United States Cast Iron Pipe and Foundry Co.

Stacks, Steel
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Stand Pipes
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Steel Plate Construction
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Steel Work, Structural
Baker Iron Works.
Western Pipe & Steel Co.

Stills
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Stoppers, Gas Main
C. B. Babcock Co.
Mueller Co.
Safety Gas Main Stopper Co.

Stops, Brass
Lattimer-Stevens Co.
Mueller Co.

Stops, Iron Body
Lattimer-Stevens Co.
Mueller Co.

Modern Pipe

but an old fashioned core

True progress is neither hide-bound conservatism nor wild revolution. It is adding the good things of the present to the good things of the past.

One of the good old-fashioned things in a pipe foundry was the sand core—that shaped the inside of the pipe, so McWane retains it. But the method of its use is as completely changed as the length of a flapper's dress.

The pipe is modern—stronger iron but lighter in weight—and the core is old-fashioned—its refractory qualities giving a smooth interior surface to the pipe barrel, and a metal section easy to tap or cut.

In McWane Pipe you are assured of the long life of old type pipe and the strength and uniformity of the new. Remember, the familiar long-life record of cast iron pipe has been made by pipe "mounded horizontally in sand—inside and outside."

McWANE
CAST IRON PIPE

McWane Cast Iron Pipe Co. Birmingham, Ala. **Pacific States Cast Iron Pipe Co.** Provo, Utah

Sales Offices in Principal Cities

267 Washington Street, Portland
208 S. La Salle Street, Chicago
1807 Santa Fe Building, Dallas
149 West Second, South, St., Salt Lake City
111 Sutter Street, San Francisco
417 South Hill Street, Los Angeles

The BARTLETT HAYWARD CO.

BALTIMORE *Engineers and Founders* **NEW YORK**

DESIGNERS AND BUILDERS
OF
COMPLETE COAL GAS PLANTS
CARBURETTED WATER GAS PLANTS
BY-PRODUCT PLANTS
DE BROUWER CHARGING AND DISCHARGING MACHINES
SALT WATER AND FRESH WATER CONDENSERS
PURIFIERS
SHAVING SCRUBBERS
CENTRIFUGAL VERTICAL TYPE SCRUBBERS
STEEL TANKS
VERTICAL WASTE HEAT BOILERS

GAS HOLDERS

STRONG

and sturdy

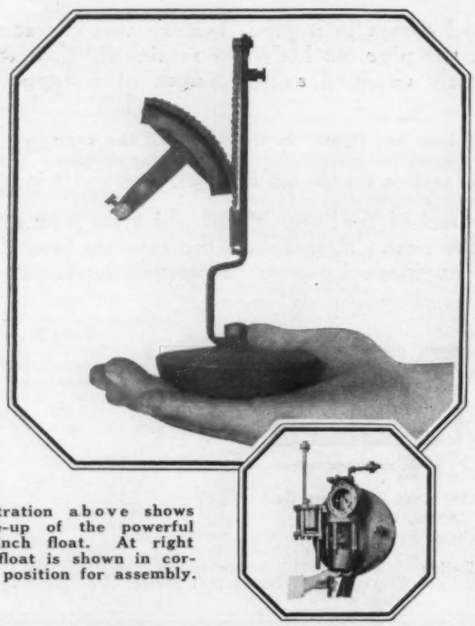


Illustration above shows close-up of the powerful 3¼-inch float. At right the float is shown in correct position for assembly.

Just one glance at this float assembly shows the sturdiness that is built into the new Foxboro Orifice Meter. Note the 3¼-inch drop forged steel float—the most powerful float used in any orifice meter in the market.

Combined with unusual strength the accuracy of this meter has established a new standard of performance. It is powerful enough to overcome dirt and to operate even if neglected for a time. There are no alibis built in a Foxboro Orifice Meter.

The new Foxboro Orifice Meter has been adopted by oil and gas companies everywhere. It possesses many revolutionary advantages including strength, accuracy, low cost of maintenance and ease of cleaning. Made in three standard differential ranges, 20, 50 and 100 inches of water. Get in touch with our nearest branch office.

Foxboro Orifice Meter

THE FOXBORO COMPANY
Neponset Avenue, Foxboro, Mass., U. S. A.

WESTERN OFFICES
Los Angeles, 443 San Pedro St.
San Francisco, 461 Market St.
Portland, Ore., 816 Lewis Bldg.

New York Chicago Philadelphia Detroit
Rochester, N. Y. Boston Atlanta
Tulsa Cleveland Dallas Pittsburgh

J. E. Treacy, Strada Golesti No. 9
Ploesti, Roumania

FOXBORO

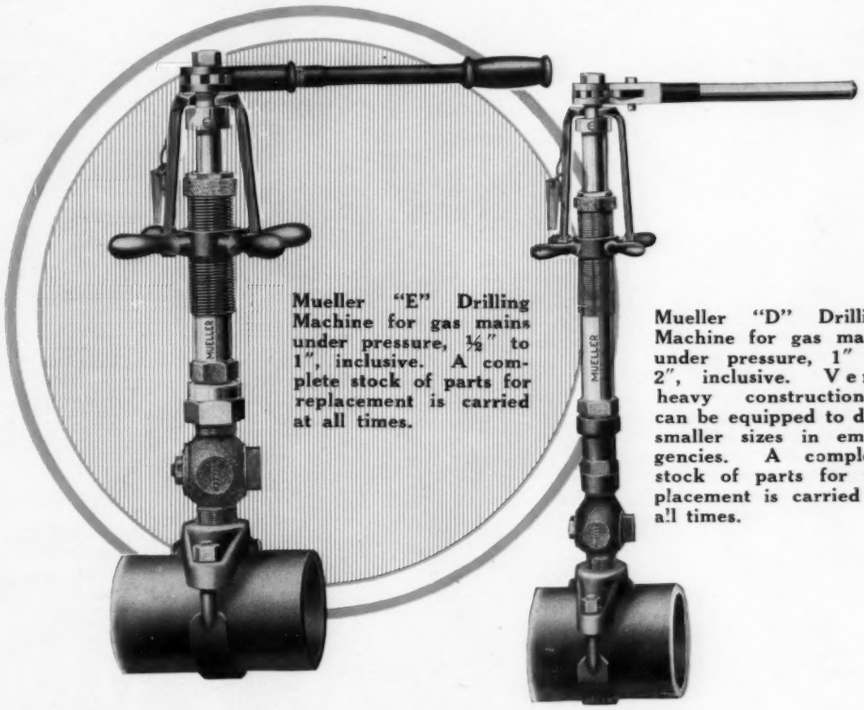
REG. U. S. PAT. OFF.

THE COMPASS OF INDUSTRY

Instruments for Controlling, Recording and Indicating Temperature, Flow, Humidity and Pressure

Advertisers' Index

American Radiator Company 14
The Arco Company 56
C. B. Babcock Company 51
Baker Iron Works 61
The Bartlett Hayward Co. 65
The Bristol Company 63
Byllesby Engineering and Management Corp. 61
The Chaplin-Fulton Mfg. Co. 53
Cleveland Heater Company 33, 34
Cleveland Trencher Company 48
Chas. R. Collins 61
The C. & G. Cooper Co. 1
S. R. Dresser Manufacturing Company 11
Electrogas Furnace Co. 49
The Fort Worth Laboratories 61
The Foxboro Company 66
L. J. Freymuth 49
General Gas Light Co. 13
Gilfillan Machine Works, Inc. 60
J. B. Gill Corporation 61
Gladding, McBean & Co. 58
Hill, Hubbell & Co. 6
Hot-N-Kold Corporation 59
Imperial Gas Co. 49
Ingersoll-Rand Company 52
International Petroleum Exposition 4
Jensen Instrument Co. 61
Johnson Gas Appliance Co. 54
E. A. Key Co., Inc. 50
Lattimer Stevens Co. ..... Fourth Cover
Leahy Manufacturing Co. 18
McEverlast, Inc. 12
McWayne Cast Iron Pipe Co. 65
Magic Way Company 60
Merco Nordstrom Valve Co. ..... Second Cover
Lee B. Mettler Co. 57
Chas. C. Moore & Co., Engineers, Inc. 52
Motor Tires, Inc. 55
Mueller Co. ..... Third Cover
National Meter Company 51
Pacific Gas and Electric Company 8
Pacific Gas Radiator Company 20
Pacific Meter Works 5
Payne Furnace and Supply Co., Inc. 16
Phillips Heating, Ventilating & Mfg. Co. 54
Pioneer Equipment Corporation 59
Pittsburgh Equitable Meter Company 7
Plant Rubber & Asbestos Co. 48
Reliance Manufacturing Company 57
Reynolds Gas Regulator Company 51
Robertshaw Thermostat Co. 47
Robinson Orifice Meter Co. 49
The P. H. & F. M. Roots Co. 10
Geo. D. Roper Corporation 17
Rotary Manufacturing Co. 55
Safety Gas Main Stopper Co. 2
Lester L. Sargent 61
A. O. Smith Corporation 9
Smith-Emery Co. 61
South Chester Tube Co. 54
Sprague Meter Co. 63
Stauffer Chemical Company 58
Stockton Fire Brick Company 52
J. T. Thorpe & Son 59
United Engineers & Constructors, Inc. 15
U. S. Cast Iron Pipe and Foundry Co. 3
Welsbach Company 45
Western Pipe & Steel Company 53



Mueller "E" Drilling Machine for gas mains under pressure, ½" to 1", inclusive. A complete stock of parts for replacement is carried at all times.

Mueller "D" Drilling Machine for gas mains under pressure, 1" to 2", inclusive. Very heavy construction—can be equipped to drill smaller sizes in emergencies. A complete stock of parts for replacement is carried at all times.

A pair of drills *that "can't be beat!"*

These drills are examples of a very complete line of drilling and tapping machines which meet every condition that may arise in gas work. Because of long experience in this phase of gas utilities, Mueller is exceptionally well fitted to serve your needs. Made of the finest materials and accurately machined—their efficient operation insures the minimum of physical effort and long life to every part.

Send for full descriptions and prices.

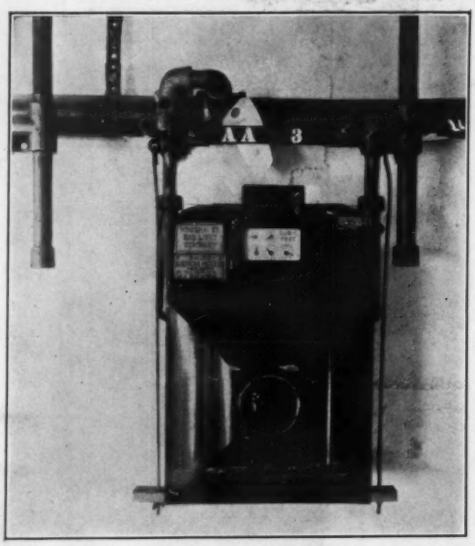
MUELLER CO.

(Established 1857)

San Francisco: 1072-76 Howard St. 2468 Hunter St., Los Angeles
Dallas: 901 McKinney Ave.
FACTORY: Decatur, Illinois
CANADIAN FACTORY: MUELLER, Limited, Sarnia.

MUELLER

DECATUR



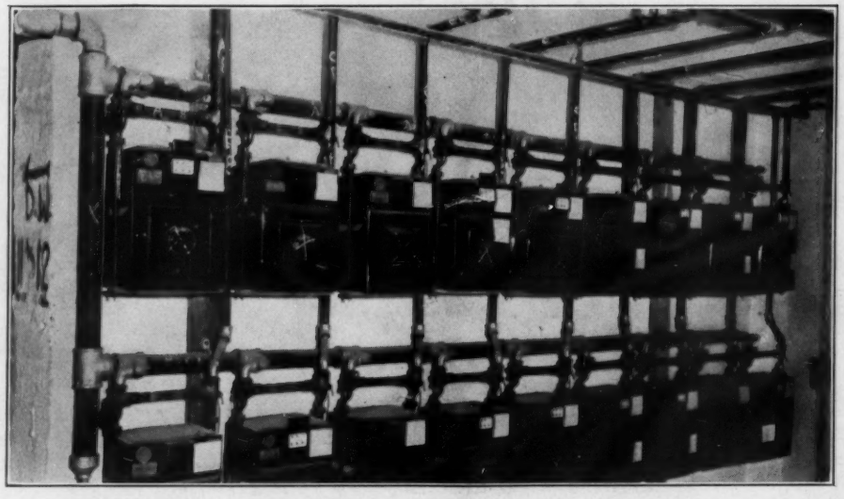
No. 4314-A Adjustable Connection with hanging shelf used by Brooklyn Union Gas Company.

IN A

SINGLE INSTALLATION

OR A

MANIFOLD



No. 45-A Adjustable connection with shelf used by Brooklyn Union Gas Company

L-S CONNECTIONS SAVE MONEY

FOR THEIR USERS

Lattimer Stevens

METER CONNECTIONS-SHELVES
STOP COCKS ~ ~ ~ AND SEALS

Columbus, Ohio

New England Representative
The Eastern Service Company
250 Stuart St., Boston, Mass.

Chicago Representative
The Utilities Service Co.
122 S. Michigan Ave.

San Francisco Representative
A. P. Bartley
163 Second St.